Blue Economy

A.Subramanyam Raju
Centre for South Asian Studies
Pondicherry University

Outline of Presentation

- Relevance of Sea
- Relevance of Blue Economy
- India’s Blue Economy
- Conclusion

Relevance of Sea

- There is a strong linkage between human development and the seas.
- Historically the humankind has largely depended on the seas for their economic and social well-being.
- Sea is seen: as a resource, as a means of transportation, information and connecting people & states
- Sea is the high road to prosperity-mutual benefit, partnership and lead to peace, stability and security.
- Sea provides unlimited repository of food, natural resources, fastest, cheapest and safest means to transport bulk goods.
- Sea-based trade leads to mutual benefit, partnership, peace, stability and security.

Relevance of Sea

- Sea connects different people, cultures, civilisations, governments, and plays a constructive role in globalisation.
- It had been instrumental in connecting all parts of the world.
- 80% of capital cities of the countries and about all major international trade centres and powerful economies are located on the coast.
- 36% of the world's oceans are encompassed within the Exclusive Economic Zone (EEZ).
- Above all, 97% per cent of the world's trade (by volume) is traversed by sea.
- Over 60% of ships fly flags different from the nationality of their owners.
- Oceans are critical for the global energy security as over 60% of world's oil production moves through sea routes.
- Maritime trade has become a dominant factor in global affairs.

Relevance of Blue Economy

- Developing Blue Economy is a global trend
- Ocean has become an economic force in 21st Century
- Trade-95 percent
- Coastal and ocean economies are often blurred and not quantified
- Hardly know importance of revenue comes from sea
- EEZ-irrespective of size
- Explore resources locally
- SDGs complimentary to each other-17 goals-Sustainable Development (Goal-14)
- Provides social and economic benefits for current and future generations

Blue Economy Sectors

- Coastal Tourism
- Offshore Oil and Gas
- Deep Sea Shipping
- Ferry Services
- Fisheries
- Inland Waterways Transport
- Coastal Protection
- Offshore Energy: Wind,Tidal, Solar etc.
- Monitoring and Surveillance
- Biotechnology
- Desalination
- Marine Mining

Estimated Future Growth Scenario Globally by 2030

- Coastal Tourism X 2
- Oil & Gas x 2
- Offshore wind X 40 times
- Sea bed mining X10 times
- Shipping X 4
- Fisheries X1 (29% of global fish stocks are over exploited)
- Aquaculture X 2 leads to over exploitation.

India's Maritime Profile

- Exclusive economic zone: 2.1 million sq.km + 1.2 million sq.km (extra)=3.3 million sq.km
- Land frontier: 15,106.7 km. (9,387 miles)
- Coastline: 7,516.6 KM (4,671 miles)
- Land: 3,287,469 sq.km
- Continental Shelf: 5,30,000 sq.km
- 1,197 islands
- 16th position in terms of possession of EEZ
- India is seen as a security provider
- India has credibility
- Never seen India as a dominant/hegemonic in the IO
- India has no maritime disputes except with Pakistan

India’s Maritime Profile

- Continental India and Maritime India
- 1+1=2
- 1+1=11
- Complementary to each other
- Strengthen each other
- Pan India-EEZ & Continental shelf give an equal amount of area of sea
- India’s profile in the world enhanced through maritime dimension

India's Blue Economy

- Blue Chakra in Indian Flag symbolizing Blue Economy
- Tsunami – Early Warning System for mitigation of Oceanogenic Disasters system – INCOIS, Hyderabad
- Fishing with Satellite use – CMFRI and ISRO - identify areas in deep seas- abundance presence of fishes - help fishermen in saving time and fuel
- Desalination technology for Lakshadweep – MoES marketed by L&T
- Project Mausam- Re-establishment of India's cultural maritime linkages with its traditional trade partners along the Indian Ocean, launched in June 2014
- Sagarmala Project – $11.3 Billion- constructing ports, coastal infrastructure, inland waterways, fishing, and creating SEZs and tourism nearly 400 projects along the coastline in two decades
- India supported Mauritius, Seychelles and Maldives – Maritime Security
- SAGAR

India’s Maritime Profile through A&N

- The Islands account one-fourth of the total coastline and about 30 per cent of India’s exclusive economic zone area.
- 40% of India’s trade go around A&N Islands
- Without A&N Islands, what would India’s scenario?
- Andaman & Nicobar Islands are strategically located in the Indian Ocean and act as a gateway to BIMSTEC, Southeast Asia and Indo-Pacific.
- Since independence India had neglected importance of ocean for a long time.
- The A&N Islands have been treated by mainland India as a ‘dump yard’ where refugee population was resettled.
- The underdevelopment of A&N Islands even after 75 years of Independence is evidence for India’s ignorance of the Islands.
- The Islands are helping mainland India and not vice versa.
- In other words, whatever development happens in the Islands is development for the mainland.

India’s Maritime Profile through A&N

- A deep-water harbour at either Port Blair or Car Nicobar will be able to serve vessels not only originating within the Bay region but also those travelling along the east-west shipping route.
- The proposed project is for transshipment terminal at Campbell Bay at Great Nicobar, the largest of the Nicobar islands.
- Campbell Bay is 90 km away from Malacca Strait, the main sea route between the South China Sea and the Indian Ocean.
- Its proximity to the Strait of Malacca, which is one of the busiest international trade routes with more than 65,000 vessels pass through it every year, is an added advantage.
- In 2015, Indian Prime Minister Narendra Modi announced to transform the islands into India’s ‘first maritime hub’ with a focus on developing ports, shipping infrastructure and tourism.

Fisheries

- Fisheries sector has a long history compared with other emerging blue economy sectors: aquaculture, marine biotech and renewable energy.
- Fish are a critical source of protein and the sector provides a social safety net. Women represent the majority in secondary activities related to marine fisheries and marine aquaculture, such as fish processing and marketing.
- In many places, employment opportunities have enabled young people to stay in their communities and have strengthened the economic viability of isolated areas, often enhancing the status of women in developing countries.

Fisheries

- Fish stocks are further affected by illegal, unreported, and unregulated fishing, which as noted earlier accounts for roughly 11–26 million tons of fish catch, or US$10– 22 billion in unlawful or undocumented revenue.
- Poor fisheries management results in foregone revenues of more than US$80 billion annually, which could be recovered if global fisheries were reformed significantly, including through a 44 percent reduction in the level of fishing(World Bank 2017).
- This requires public investment by government in fisheries, like availability of seeding, refrigeration, roads, transportation, markets etc.
- The fisheries sector provides livelihood to about 16 million fishers and fish farmers at the primary level and almost twice the number along the value chain.

Fisheries: Capital of India

Marine	
Length of coastline (Km)	8118
Exclusive Economic Zone (EEZ) million Sq Km	2.02
Continental Shelf (‘000 sq km)	530
Number of Fish Landing Centres	1,537
No of fishing villages	3,432
No of fishermen families	8,74,745
Fisher-folk population	40,56,21
Inland	
Total inland water bodies (Lakh Ha)	73.59
Rivers and canals (km)	195210
Reservoirs (Lakh Ha)	29.07
Tanks and Ponds (Lakh Ha)	24.14
Flood plain lakes/derelict waters (Lakh Ha)	7.98
Brackish water (Lakh Ha)	12.40

Source: State Governments, CIFRI, CMFRI

Fisheries Sector Data (2000-2001-2017-2018)

Total	Fish Production (in Lakh tonnes)		Total	Annual Average Growth Rate (%)		All India
	Marine	Inland		Marine	Inland	
2000-01	28.11	28.45	56.56	-1.44	0.78	-0.33
2001-02	28.30	31.26	59.56	0.68	9.88	5.30
2002-03	29.90	32.10	62.00	5.65	2.69	4.10
2003-04	29.41	34.58	63.99	-1.64	7.73	3.21
2004-05	27.79	35.26	63.05	-5.51	1.97	-1.47
2005-06	28.16	37.56	65.72	1.33	6.52	4.23
2006-07	30.24	38.45	68.69	7.39	2.37	4.52
2007-08	29.20	42.07	71.27	-3.44	9.41	3.76
2008-09	29.78	46.38	76.16	1.99	10.24	6.86
2009-10	31.04	48.94	79.98	4.23	5.52	5.02
2010-11	32.50	49.81	82.31	4.70	1.78	2.91
2011-12	33.72	52.94	86.66	3.75	6.28	5.28
2012-13	33.21	57.19	90.40	-1.51	8.03	4.32
2013-14	34.43	61.36	95.79	3.67	7.29	5.96
2014-15	35.69	66.91	102.60	3.66	9.04	7.11
2015-16	36.00	71.62	107.62	0.87	7.04	4.89
2016-17	36.25	78.06	114.31	0.70	8.99	6.21
2017-18	36.88	89.02	125.90	1.73	14.05	10.14

Enhance Fishing activities

- Fisheries- what needs to be done.
- Better governance
- Promoting deep sea fishing
- Strengthening monitoring and enforcement mechanism
- Infrastructure
- Need for assertive and proactive role
- Social inclusion and needs to focus on marginalised community
- Fishing sector employs 15 million people in India and ranks second (6.3 per cent) in the world fish produce (Rs 1 lakh crore in 2015-16). Employment opportunities in fisheries have enabled young people and women to get employment (fish processing and marketing) and enhance their status in developing countries. Despite remarkable statistics of the Indian fishing industry, India lags by many miles behind China.

Shipping

- Shipping provides the principal mode of transport for the raw materials, goods, foodstuffs, and energy resources.
- It is cheapest, fastest and safest mode of transportation.
- It facilitates for global trade and contributes to economic growth.
- Ports could play significant role in economic growth (12 major and 200 minor ports)
- The total employment at major ports was more than 30,000 in 12 major ports but these ports have shown a 14% decline between 2003 and 2018. Around 35,000 people directly employed in the sector with another 23,000 in downstream industries.
- Malacc Straits: 5^{th}-10^{th} Century-the command of the Malacca Straits was under Sri Vijaya Empire-Vijaya Kings were the lords of the ocean.
- 4,000 Indian ships had sailed in and around IO during Akbar's time (1556-1605)
- Capacity of 800-1000 tonnes., superior to British ships.
- Cheap labour cost, established steel industry and skilled manpower, know-how technology
- South Korea, China & Japan

Shipping

- India is currently importing³4.56 million bbd
- India was importing 4.56 million barrels of oil per day (i.e. 622,101 tonnes per day) in 2019-20, and all of came on non-VLCC tankers, India required 7.776 (i.e. 8 tankers per day)
- Or, if all of it were to come on VLCCs, the requirement for 2.5 VLCCs per day-i.e. one every 8-12 hours!
- India, currently, has around 32 shipyards, owned by: central government (6), state governments (2), public listed private shipyards (3) and privately held shipyards (22). The major share of the ship-building capacity in India is controlled by 8 public sector yards, with Cochin Shipyard Limited and Hindustan Shipyard Limited having capacity and infrastructure to build vessels of 1.1 lakh dwt, and 80,000 dwt respectively. Barring these 2 shipyards, the majority of private sector shipyards have limited ability to build vessels. India's capability of building technologically advanced ships, including LNG carriers are relatively less and Indian shipyards are primarily defence oriented.

Ports

- India does not have natural and deeper port facility despite having longest coastline.
- Indian government has proposed to construct port in the South Bay (Great Nicobar islands).
- However, there were objections raised by the Ministry of Environment and Forests.
- The Ministry is against the large-scale development in the area.
- There are a few locations in the Islands that can be considered ports for transshipment.
- These include Port Meadow, Campbell Bay, MacPherson Strait and Great Nicobar.

Ports

- To enhance activities at Ports:
- Ease of doing business
- Cargo segregation
- Mechanisation
- Deepening the draft
- Speedy evacuations
- Multi modal hubs in port
- Port industrialisation
- Tariff structures

Tourism

- Tourism, fast becoming the largest global business, employs 1 out of every 11 persons globally.
- Coastal tourism is vital sector of the economy in many countries includes dive tourism, maritime archaeology, surfing, cruises, ecotourism and recreational fishing operations.
- It not only generates revenue but also protects and respects local cultures, traditions and heritage.

- 80 percent of all tourism takes place in coastal areas
- India has submitted applications for eight beaches, viz. Shivrajpur (Gujarat), Ghoghla (Diu), Kasargod and Padubidri, (Karnataka), Kappad (Kerala), Rushikonda (Andhra Pradesh), Golden beach (Orissa and Radhanagar (Andaman and Nicobar Islands) for blue flag certification to Foundation for Environment Education (FEE).
- Tourism can be an important source of foreign exchange and is tied to the social, economic, and environmental well-being of many countries.
- Maritime or ocean related tourism, as well as coastal tourism, are vital sectors of the economy in many countries.
- According to the United Nations World Tourism Organization (UNWTO), the sector supported 313 million jobs, almost 10% of the total global jobs in 2017. In India, tourism sector provides employment to around 40.3 million.

- Trade:
  - Trade: 95 % of India's trading by volume and 70% by value is done through maritime transport, 40,000 tankers come to Indian ports annually.
  - Trade can be enhanced through strong ports and using own ships.
  - Maritime transport is considered as the backbone of international trade and globalisation.
  - Maritime transport plays an important role in the economies of coastal states given their reliance on imports and openness to international trade
  - 60 % of our cargo go by foreign ships

Marine Biotechnology

- The marine environment offers a new frontier of biological resources for developing a range of products from pharmaceuticals and chemicals.
- Marine species provide key ingredients for biofuel, cosmetic products, dietary supplements, painkillers and even treatments for cancer, asthma and arthritis, and scientists have discovered useful properties in krill, sponges, soft corals, worms and deep sea bacteria that could provide a variety of new innovations.
- In 2011, the demand for pharmaceuticals from marine species was valued at US$4.8 billion worldwide and is anticipated to grow to US$8.6 billion by 2016.
- One example, a painkiller called Prialt Ziconotide derived from marine cone shell venom, generated sales revenues of US$12.1 million as early as 2006.
- In 2011, demand for pharmaceuticals from marine species was valued $4.8 billion worldwide and is anticipated to grow more than double.
- A pain killer called Prialt Ziconotide derived from marine cone shell venom generated sales revenue of US $ 12.1 million as early as 2006
- Extraction of metals from the seabed is still not economically viable.
- Risky venture: R&D can cost US$30,000 per day to sample at sea and take 15 years to move from research to commercialization
- Critics point out that the mining process can introduce toxic substances, sediment plumes, vibrations, light and invasive species that can harm local sea life.
- As a nascent industry in a complex environment, investment in biotechnology can be a risky venture with high barriers to entry.
- As a young industry, the extent of environmental damage from seabed mining activities is not fully understood.

Blue Energy

- Energy Sustainable marine energy can play a vital role in social and economic development, as well as in climate adaptation and mitigation.
- While offshore wind energy is becoming more common, other forms of marine energy extraction are still experimental, and in most cases have not yet been developed on a commercial scale.
- Rely on fuel imports to meet the vast majority of their energy needs, which makes them extremely vulnerable to fluctuating global energy prices and disproportionately high transportation costs.
- There are hundreds of isolated communities. Needs power-blue energy
- High latitude locations
- Economic reforms, population growth, urbanization, demographic transition and growing transport sector in India are resulting in a rapid demand for more and more energy.
- The demand for energy consumption is likely to increase many folds.
- Economic growth is the major cause of rising emissions.
- In India a total of 0.7 million people were employed both directly and indirectly in the renewable energy sector in 2018, out of which around 48% are in the hydropower and 8% are in the wind energy, however no clear estimates are available for the tidal or wave or ocean energy.

Coastal Governance Index

- Based on extent of governmental regulation on coastal, EEZ activities and performance on four categories:
- (i)water quality
- (ii)exploration of mines and minerals
- (iii)land and
- (iv) living resources/wildlife management
- Need to have a data framework for assessments in three critical areas:

  -oceanic health-tracking waste and contamination

  -exploration of resources-living and non-living

  -preservation and rehabilitation

Coastal Governance Index indicator framework

1. **Policy and institutional capacity** (Coastal management policy and strategy 1.2) Presence of established institution(s) 1.3) National strategy to adapt to climate change 1.4) Maritime Spatial Planning 1.5) Stakeholder engagement 1.6) Extractive industries transparency 1.7) Adoption of the United Nations Convention on the Law of the Sea (UNCLOS)

2. **Business environment for coastal activities** (Ease of doing business 2.2) Corruption perception 2.3) Effectiveness of dispute resolution mechanisms 2.4) Quality of coastal infrastructure)

3. **Water quality** (Agency 3.2) Regulatory standards for water pollution 3.3) Monitoring and enforcement 4) MINERALS AND ENERGY 4.1) Permitting and licensing 4.2) Monitoring and enforcement 4.3) Risk mitigation)

4. **Minerals and energy** (Permitting and licensing 4.2) Monitoring and enforcement 4.3) Risk mitigation)

5. **Land** (Prevalence of coastal protected areas 5.2) Environmental impact of coastal development 5.3) Government commitment to sustainability in coastal tourism development 5.4) Natural disaster risk mitigation)

6. **Living resources** (Fisheries governance and management effectiveness 6.2) Protection for marine/coastal species 6.3) Ballast water treatment)

Coastal Governance Policies:

Overall score rankings		
Rank/20	Country	Score/20
1	New Zealand	86
2	US	85
3	France	82
4	Spain	80
5	Norway	79
6	Japan	78
7	Canada	76
8	South Korea	72
9	South Africa	68
10	Brazil	67
10	Chile	67
12	China	61
13	Mexico	60
14	Philippines	59
15	Indonesia	57
15	Vietnam	57
17	India	56
18	Peru	55
19	Nigeria	50
20	Russia	42

Capacity			Business Environment for Coastal Activities		
Rank/20	Country	Score/20	Rank/20	Country	Score/20
1	Norway	86	1	Canada	89
1	Spain	86	2	Norway	88
3	US	85	3	New Zealand	87
4	France	79	4	US	86
4	Japan	79	5	France	83
6	New Zealand	75	6	Spain	80
7	Philippines	74	7	Japan	78
8	Canada	71	8	Chile	76
8	China	71	9	South Korea	73
8	South Africa	71	10	South Africa	56
8	Vietnam	71	11	Mexico	54
12	Indonesia	69	12	Brazil	50
13	South Korea	68	13	China	47
14	Brazil	64	14	Philippines	44
15	Mexico	57	15	Vietnam	42
16	India	54	16	Peru	41
17	Nigeria	43	17	India	40
18	Chile	36	18	Indonesia	39
19	Peru	32	19	Russia	32
20	Russia	14	20	Nigeria	17

Water Quality:			Minerals & Energy		
Rank/20	Country	Score/20	Rank/20	Country	Score/20
1	France	83	1	Japan	92
1	New Zealand	83	1	Norway	92
3	Chile	82	3	Canada	86
3	Japan	82	3	Nigeria	86
5	US	80	3	US	826
6	Spain	79	6	Brazil	82
7	South Korea	78	6	New Zealand	82
8	Mexico	77	6	South Africa	82
9	Norway	77	9	South Korea	81
10	Peru	76	10	China	76
11	Brazil	75	11	Chile	75
11	India	75	12	India	74
13	Vietnam	74	13	Spain	72
14	Indonesia	73	14	Philippines	71
15	South Africa	71	15	Mexico	67
16	Canada	67	15	Peru	67
17	China	66	15	Russia	67
18	Nigeria	62	18	France	64
19	Philippines	61	19	Vietnam	57

Land			Living Resources		
Rank/20	Country	Score/20	Rank/20	Country	Score/20
1	New Zealand	96	1	US	97
2	France	92	2	New Zealand	94
3	Spain	80	3	France	91
4	US	79	4	Spain	83
5	China	78	5	Norway	79
5	Peru	78	6	Brazil	78
7	Japan	77	7	Canada	77
8	Indonesia	76	8	Chile	71
8	Philippines	76	9	South Korea	70
10	Canada	67	10	Japan	62
10	South Africa	67	10	Russia	62
12	Chile	64	12	South Africa	60
13	India	63	13	Mexico	51
13	South Korea	63	14	Indonesia	37
15	Vietnam	62	14	Peru	37
16	Nigeria	61	16	Vietnam	34
17	Mexico	53	17	India	31
17	Norway	53	17	Nigeria	31
19	Brazil	50	17	Philippines	31

Coastal Governance Index

S.No.	Variables	Rank/20	Score/20
1	Coastal Governance Policies	17	56
2	Capacity	16	54
3	Business Environment for Coastal Activities	17	40
4	Water Quality	11	75
5	Minerals & Energy	12	74
6	Land	13	63
7	Living Resources	17	31

Environmental Degradation

- Environmental issues are not the main concern for most of the countries in the Indian Ocean region
- Environmental degradation will have serious implications not only for marine ecology but also affect the livelihood of the fishing community
- Degradation of coral reefs
- Discharge of fuel and emissions by ships and land based pollution
- There had not been no major oil spills in the Arabian sea, except the **MV Tasman Spirit, the Greek tanker carrying 67500 tons of crude, which broke in to two on 28 July 2004. It leaked nearly 25000 tons of crude.**
- As a result the entire marine life off the Karachi destroyed.

Oil Spill over

- Heavy Fuel Oil (HFO) spilled into the sea in the early hour of Jan 28, 2017, following the **collision between two cargo ships** MT Maple and MT Dwan at **Kamarajar Port**.
- The oil spill off the coast has been estimated to have affected **52 km**.
- **208 tonnes of sludge was removed as were 90,000 litres of oil mixed with water by super sulkers.**

Climate Change and Rise of Sea level

- Due to the impact of climate change, it is expected that the sea level will grow up.
- **By 2050, about 250 million** people may leave their places due to intensifying monsoon flooding, desertification and reduced food production.
- coastal fishery and agriculture are likely to be affected.
- If a **one-meter** sea level rise were to take place, it would displace **7 million** persons in India.
- It was estimated that the cost to Mumbai of a one meter sea level rise at $71 billion, indicative of the huge economic cost of climate change faced by Asia's coastal city.
- India's GDP may loss two per cent and other South Asian countries may suffer even more.
- India: 25-30% mitigation of Carbon dioxide emissions -**17% poverty and 4% GDP** reduction

Governance at Sea

- Governance at sea is to safeguard the sea frontiers, ports, offshore installations and EEZs, to protect marine ecosystem, lives and property, sea lanes of communication, and to prevent smuggling, poaching, piracy, gun running and trafficking.
- According to the World Bank estimations, piracy costs the world economy about $18 billion a year.
- Some pirates (Somalians) extend their activities upto 700 nm in the Indian Ocean region, whereas the littoral states have only 200 nm jurisdiction over the waters due to an EEZ.
- Two-thirds of the world's population lives within 100 kilometres of the coast and it is bound to get worse, when the population doubles in the future.

Audit of Revenue from Sea

- -Estimating value added helps in understanding the contribution of economic activity
- -Understanding domestic and international trade-value and volume
- Business/commercial potential
- Natural Resource Accounting helps in doing cost-benefit analysis
- Assessment of environmental degradation, costs of wastage, losses and foregone benefits
- Valuation of resources
- Assessments of costs for maintenance, protection, preservation and restoration.

Private Sectors

- There is a significant need for private sector capital and expertise to scale up blue economy investments for the benefit of both communities and companies.
- Opportunities:

  Reduced costs through: • efficiency; • more engaged workforce; • Stronger relationships with communities and government, and the social license to operate that comes with it; • Greater levels of innovation; • Enhanced reputation; • Access to new markets; and • Access to new sources and lower cost of capital.
- Risks: • Lack of financial resources to devote to sustainable development; • Lack of public awareness about sustainable practices (by consumers and communities); • Pressure from competitors following unsustainable practices; and • Challenges in establishing effective partnerships with government and NGOs.

Private Sectors

- Private sector activities are only half of the story of building a blue economy.
- Governments must provide effective policies and regulatory regimes to establish stable governance and proper ecological protections to enable sustainable private sector operations and investments, including policies ensuring that environmental and social costs are internalized.
- The private sector can/must play a key role in the blue economy: Business is the engine for trade, economic growth and jobs, which are critical to poverty reduction
- International alliance for private sector leadership and collaboration in “Corporate Ocean Responsibility,”
- Annual Summits: “Industry leadership in ocean governance and the blue economy

Blue Clusters

- Clusters have been originally defined as “geographically proximate group of interconnected companies, associated institutions and research bodies, in turns linked by commonalities and complementarities”
- Maritime clusters play a significant role in bringing industry and government stakeholders together to promote development of the different sectors.
- The cluster is a focal point for all: companies, institutions, research centres acting at various levels in the transformation of products, including the programming of maritime activities.
- The role of cluster is to promote, coordinate and represent the needs of the sectors.
- The cluster supports companies from different sectors such as fishing, aquaculture, shipbuilding, maritime transport, maritime tourism, maritime research and training, ports and port activities and industries.
- To develop blue economy, we need to bring together science, technology, industry and financiers, and other stakeholders from different value chains, sharing common interests to develop synergies.

Blue Clusters

- interconnections between industries that make integrated approaches a crucial element of blue economy:
- Aquaculture, if not properly zoned, can affect ship navigation routes and tourism sites
- Fisheries and tourism can both benefit from proper management of marine protected areas
- Oil and gas and shipping companies have a shared interest in oil spill preparedness and response
- Pollution from coastal development and manufacturing can damage tourism sites
- Marine technology providers can help fisheries companies in combating IUU fishing
- Seabed mining and oil and gas companies face similar environmental concerns in the marine environment from deployment of large infrastructure
- Marine renewable energy can supply energy for numerous sectors, but infrastructure can compete for ocean space with other industries
- Marine biotechnology can generate new solutions for environmental services and other industries

Blue Clusters

- Investors+Business+Innovators
- **To accelerate investment in the Ocean economy**, there is a need for an international structure and process to bring together:
- **The investment community**
- **Leadership companies** from major ocean use sectors
- **Enterprises and innovators that provides solutions** to ocean business sustainability challenges

Marine/Maritime Spatial Planning

- MSP is a dynamic process that addresses the use of sea areas by humans, with efficiency and efficacy concerns and principles.
- A single location can be designed for multiple uses.
- Data base, mapping
- Marine spatial planning (MSP) is a coordinated approach to designating where human activities occur in the ocean to minimize conflicts among stakeholders, maximize the benefits that people receive from the ocean, and help maintain healthy marine habitats.
- Maritime spatial planning (MSP) is the **tool to manage the use of seas and oceans coherently** and to ensure that human activities take place in an efficient, safe and sustainable way
- Tourism is highly dependent on environmental quality to attract visitors (security)
- Fish-marine pollution, climate change, illegal fishing
- Smart Oceans/Smart Industries: Ocean based industries stand to benefit from improved availability of data in the marine environment such as currents, wave characteristics and water quality.

Conclusion

- Global Commons not to be seen as contested commons/controlled commons/command of commons
- Most of the littoral states wish to see zone of peace rather zone of conflict
- Needs to develop blue economy, which would avoid conflict over resources, since blue economy encourages to explore resources locally.
- Oceans/seas are last frontier and needs to be careful in exploring resources
- Research & development: (sea sponge from the Caribbean was the source of chemical-drug; venom from a cone shell from I.O led the development of medication for chronic pain. Algae-for Cancer)
- Investment
- Technology transfer/sharing/know-how
- Exploration
- Ministry for Blue Economy
- 21st Century has been called as the century of the Seas
- Oceans represent a new economic frontier for growth, development and investment
- Economic growth and ocean health
- Samudra Manthan: Churning of the Sea (Angels Vs. Demon)


thank you