



Class 10.1- Blue economy, the sustainable use of ocean resources for economic growth, improved livelihoods and jobs

Milton L. Asmus

Federal University of Rio Grande – Brazil

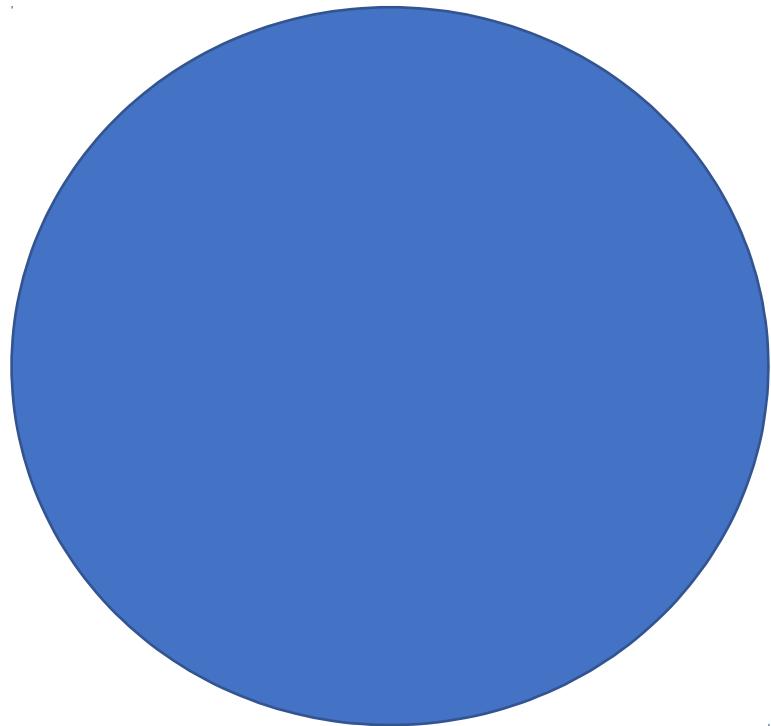
São Paulo School of Advanced Science on Ocean Interdisciplinary Research and Governance

São Paulo, August 18th 2018

The Blue Economy

- Background
- Definition
- Principles
- Minimum Criteria
- Components
- Sectors
- Growth Areas
- Practical Activity





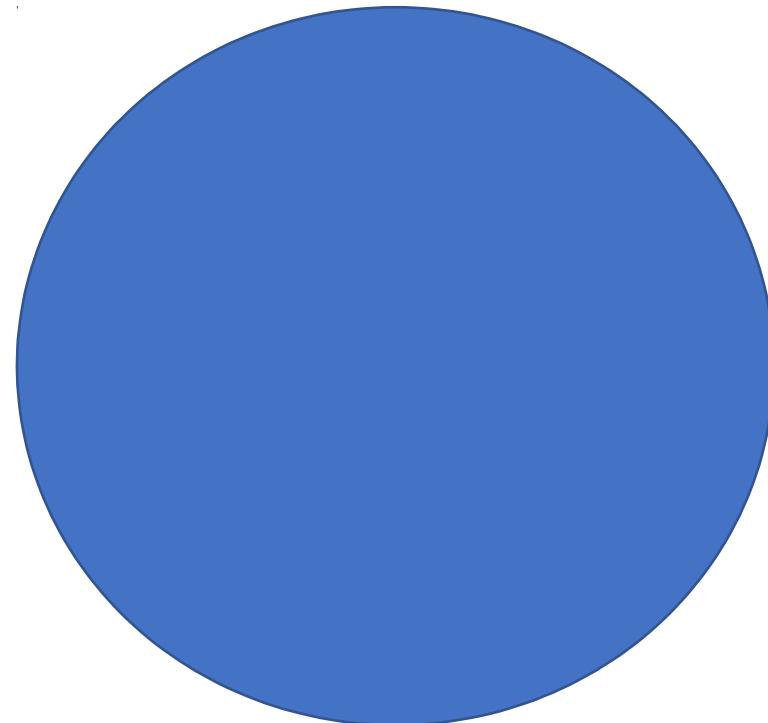
Earth

Sources of Energy

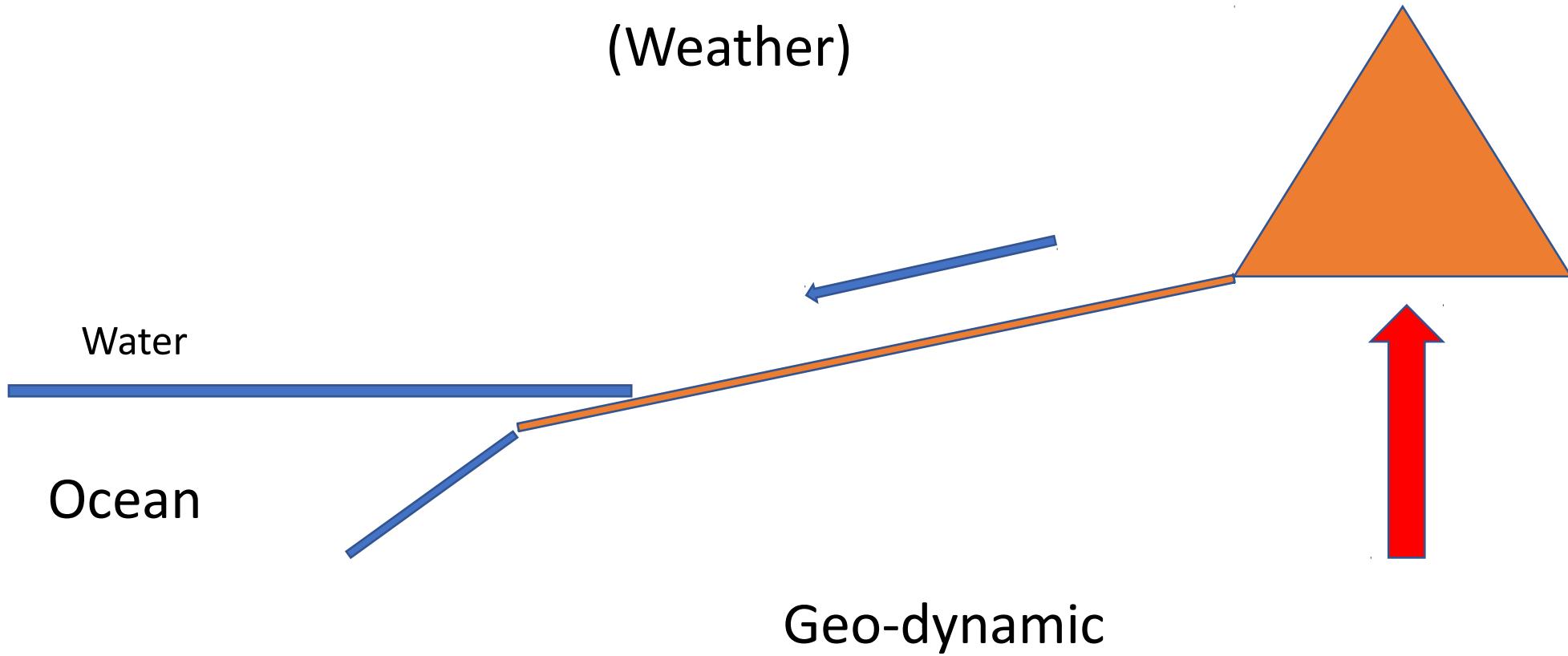
Internal heat

Sun

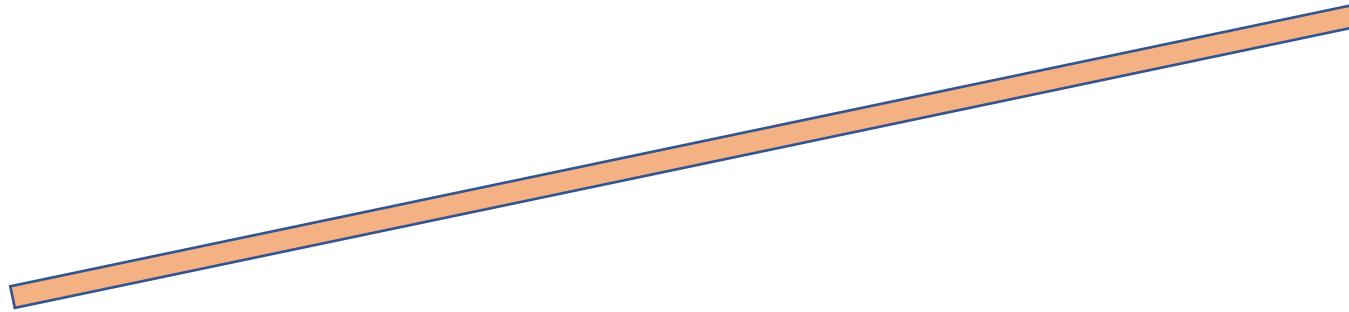
Gravity



Climate Pattern (Weather)

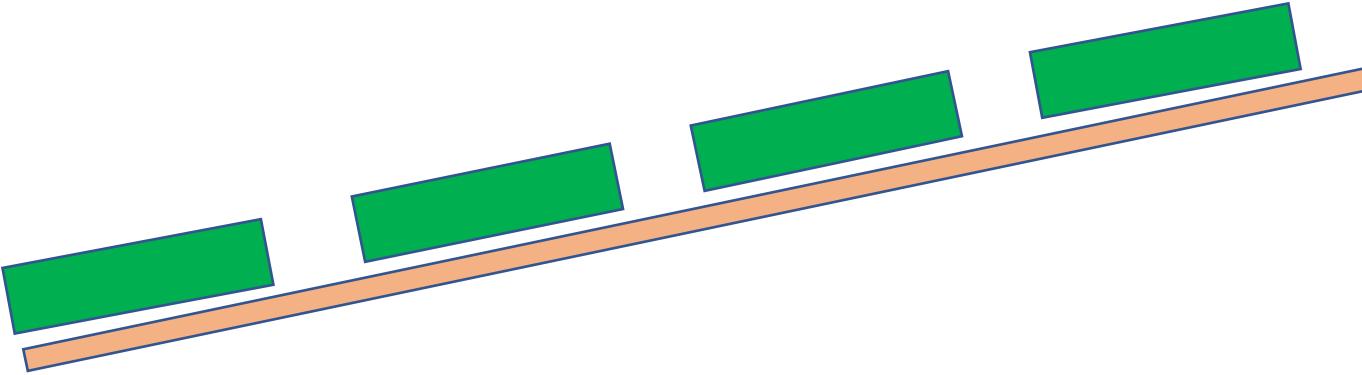


Different
Illumination
Humidity
Pressure
Temperature



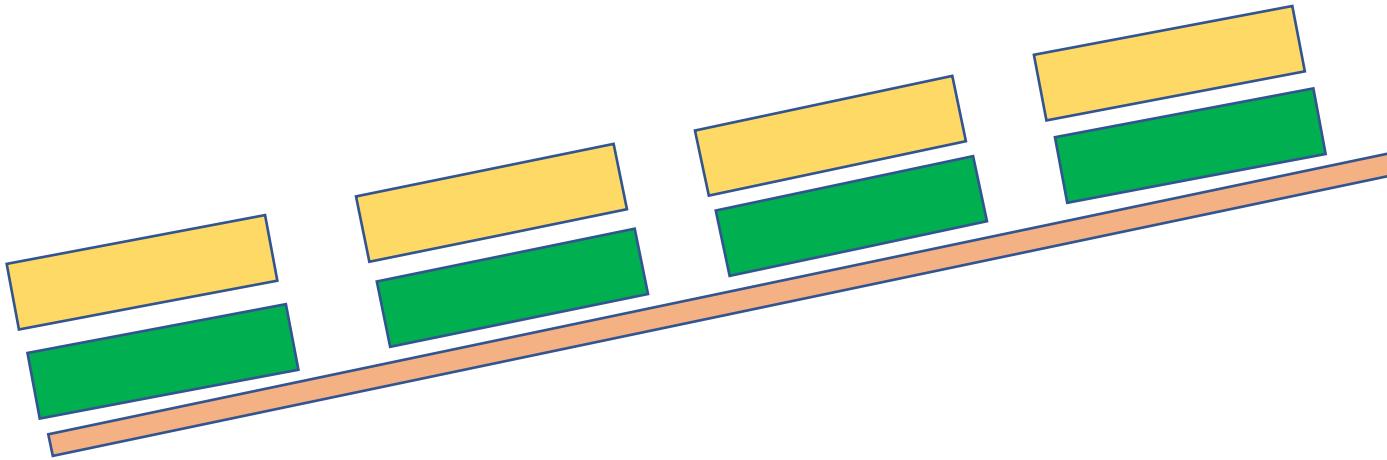
Different
Illumination
Humidity
Pressure
Temperature

Plants



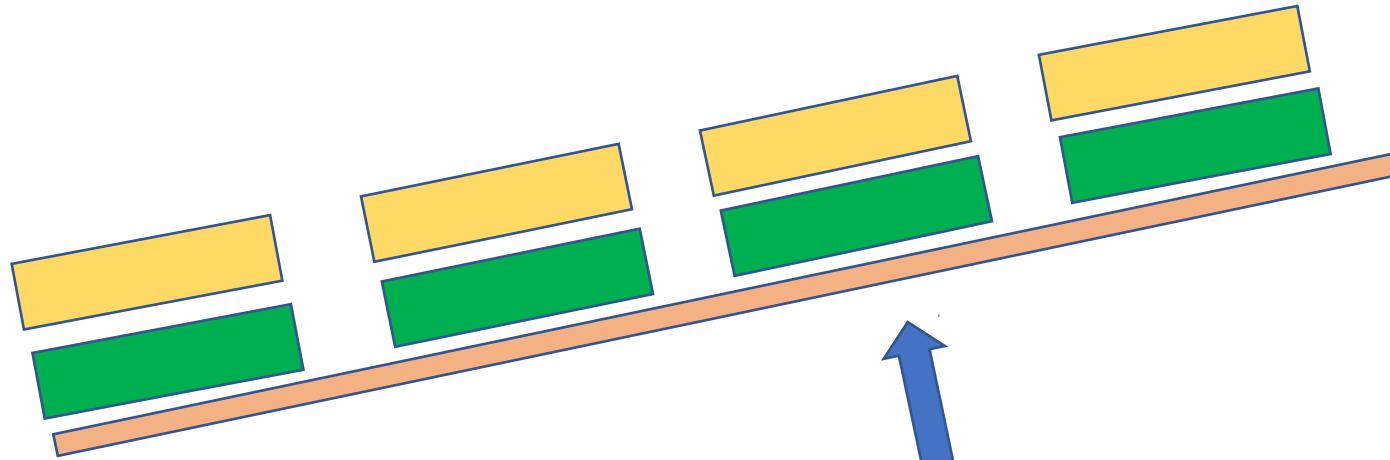
Different
Illumination
Humidity
Pressure
Temperature

Animals



Different
Illumination
Humidity
Pressure
Temperature

Animals

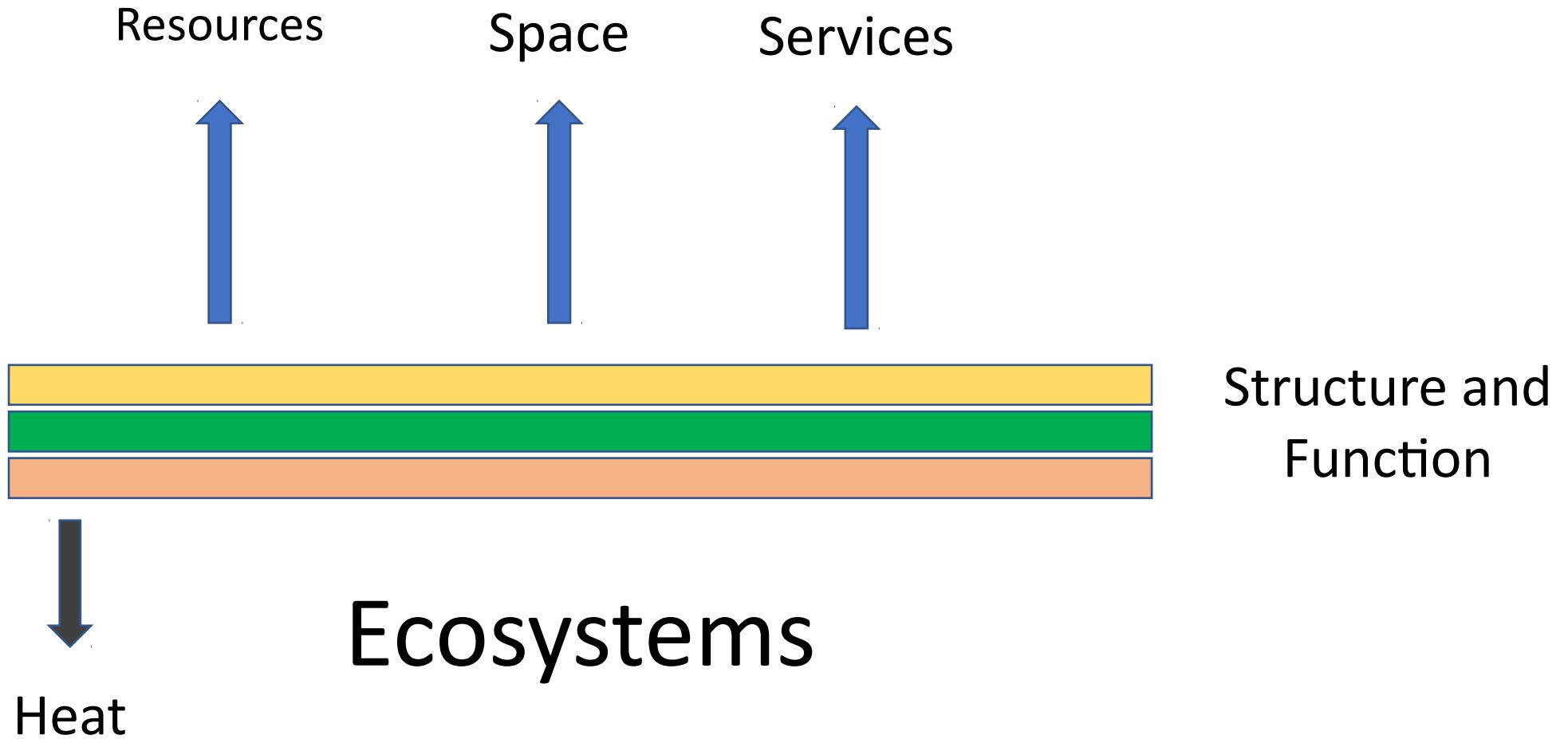


Ecosystems



Structure and
Function





Economy of Nature

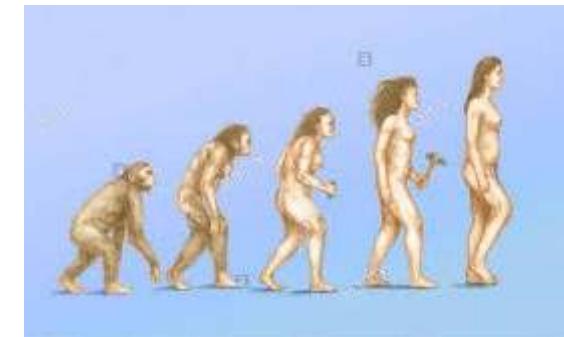
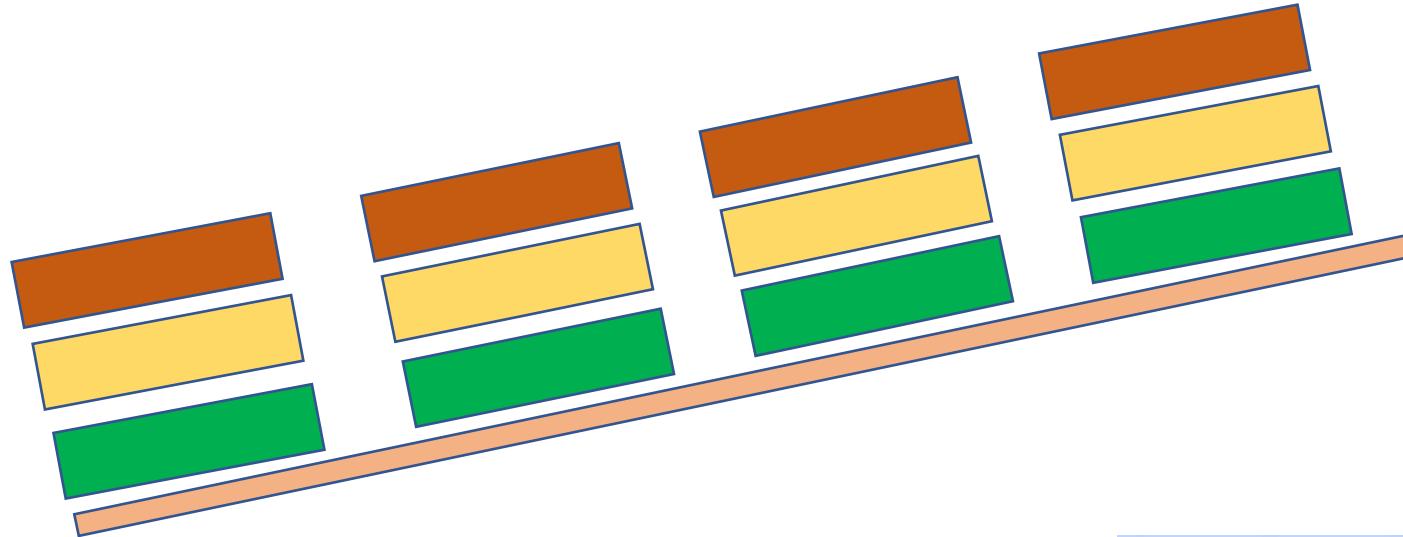


Ecosystems

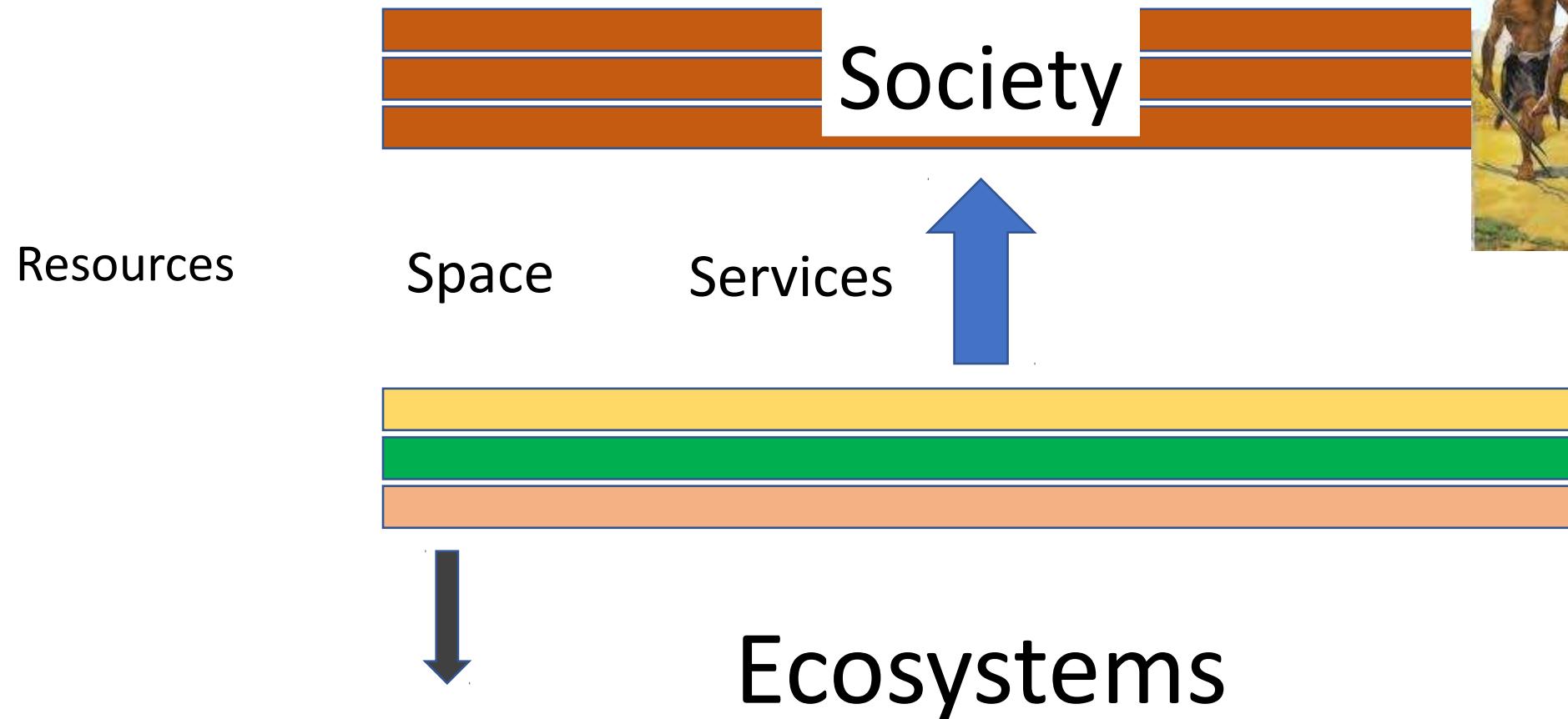


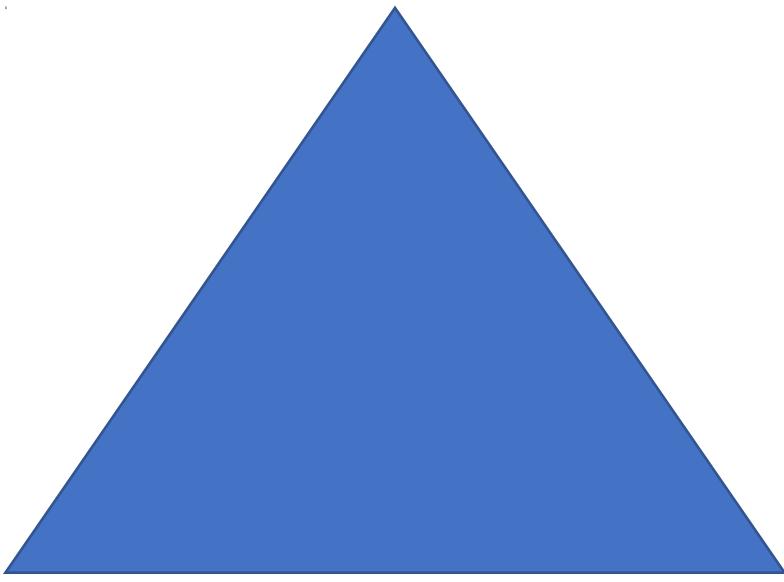
Different
Illumination
Humidity
Pressure
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Human beings

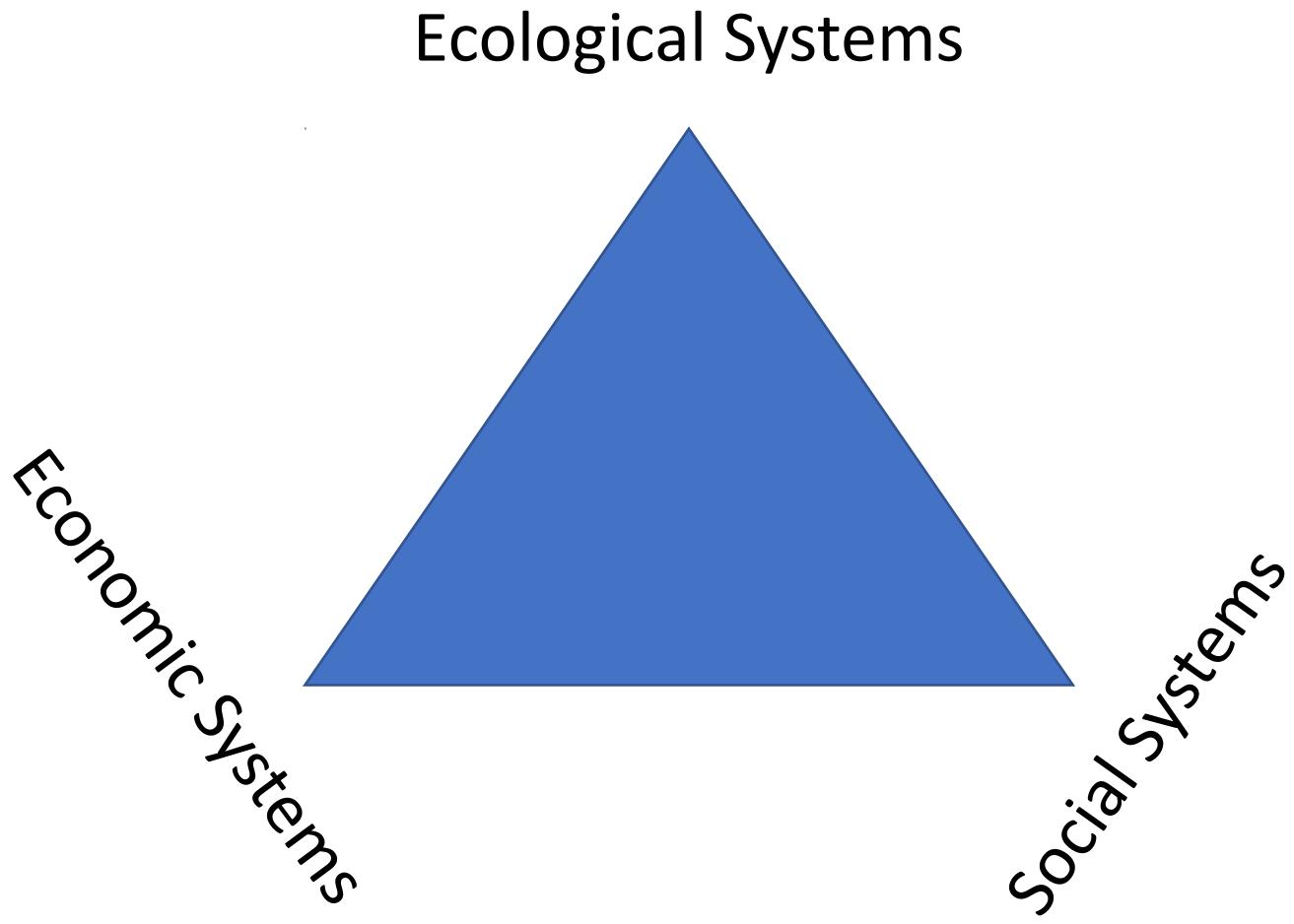


Human Economy

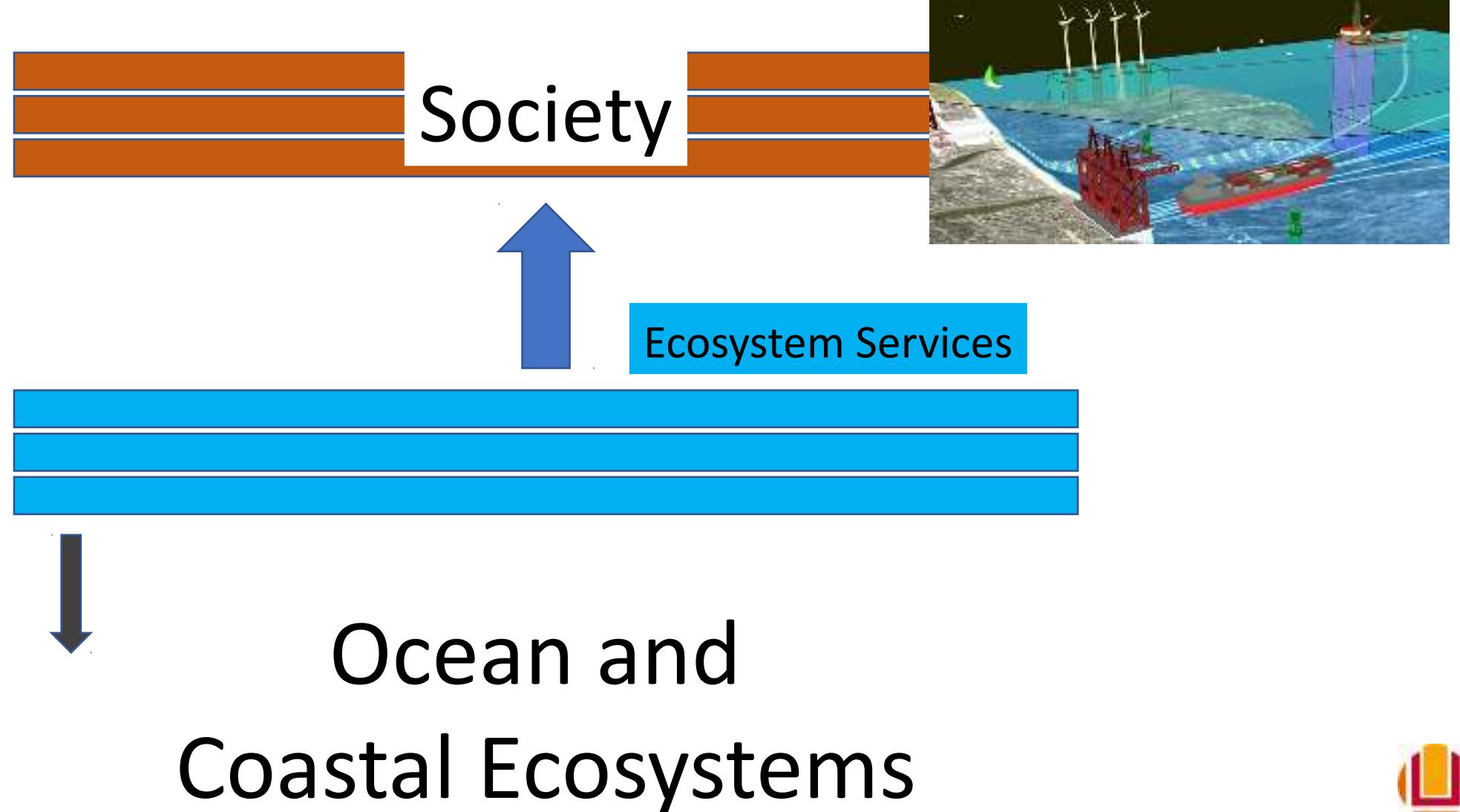




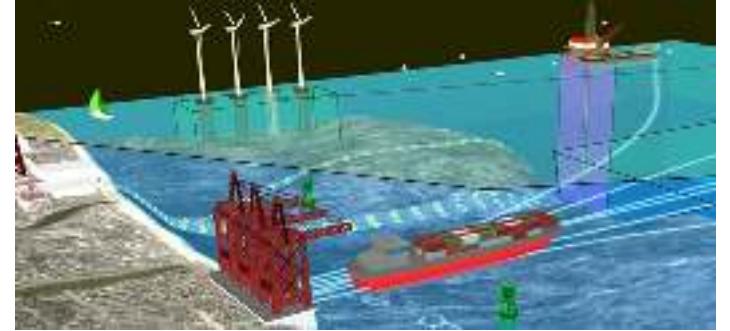
The Earth Environment



Blue Economy?



Is that Blue Economy?



.... or is more like a Policy?

.... or is more like a Philosophical approach?

.... A dream?



Background – occupation and threats in the coastal and ocean region

There are a number of factors driving the world's population toward deeper dependence on the sea, including

- *population growth;*
- *Urbanization;*
- *Trade; and*
- *technology.*



Background – occupation and threats in the coastal and ocean region

The primary threat to the ocean economy over the long term is the ocean's health, which has deteriorated, and, in the absence of the regulatory changes and technological innovations, could continue to do so.

Four primary factors affecting its health are:

- 1) climate change;
- 2) acidification;
- 3) pollution; and
- 4) overfishing.

Morillo and Spalding 2017



Background – occupation and threats in the coastal and ocean region

- Globally economic relationships with the oceans are evolving.
- Currently the setting for international commerce and transport, a significant source of food and energy, the oceans' contribution to countries are already important.

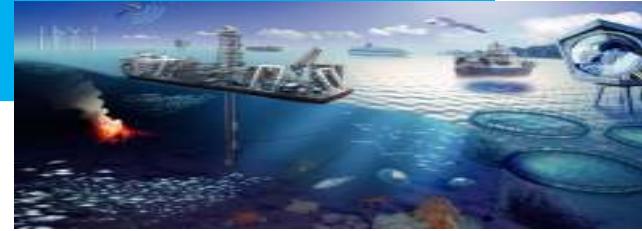
\$1.5 TRILLION IN
VALUE ADDED, OR
ABOUT 2.5% OF THE
WORLD'S TOTAL

Morillo and Spalding 2017

19% of GDP in Brazil
PUC-RS 2015



Background – occupation and threats in the coastal and ocean region



- Growing familiarity with the oceans environment, new technologies for ocean resource exploitation, longer- term growth and demographic trends, food security and alternative sources of minerals and energy, increased seaborne trade as well as rapid coastal urbanization are **drivers** of the evolving relationship
- Globally through new national ocean development plans, governments are focusing on the oceans for a source of jobs, innovation and competitive advantages



Background – occupation and threats in the coastal and ocean region

- This gathering trend of expansion and acceleration of human activity in and around the ocean, is seen as the industrialization of the oceans.
- “Blue Economy” concept has its origins in the broader green movement and describes a sustainable balance between economic growth and ocean health



The Blue Economy - concept

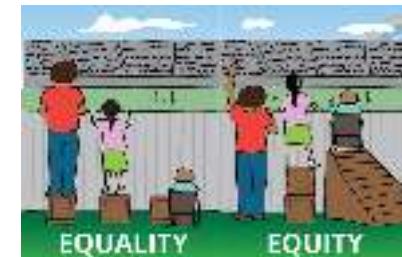


- The Blue Economy espouses the same desired outcome as the Rio +20 Green Economy initiative namely: ***“improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”*** (UNEP 2013) and it endorses the same principles of ***low carbon, resource efficiency and social inclusion***, but it is grounded in a developing world context and fashioned to reflect the circumstances and needs of countries whose future resource base is marine.



Fundamental to this approach is the principle of equity ensuring that developing countries:

- Optimize the benefits received from the development of their marine environments e.g. fishery agreements, bioprospecting, oil and mineral extraction.
- Promote national equity, including gender equality, and in particular the generation of inclusive growth and decent jobs for all.
- Have their concerns and interests properly reflected in the development of seas beyond national jurisdiction; including the refinement of international governance mechanisms and their concerns as States proximate to seabed development.



The Blue Economy - concept



Definition - considering:

- Marine-based economic development leading to improved well-being and social equity, whilst reducing environmental risks and ecological scarcities.
- Reframing the oceans as “development spaces” subject to spatial planning
- Incorporating the value of the oceans into economic decision making



The Blue Economy - concept



Definition - considering:

- Establishing policies that favour low-carbon, resource-efficient, and socially inclusive development
- Prioritizing the use of the oceans to benefit people, alleviate poverty, generate employment and promote equity
- Decoupling socio-economic development from environmental degradation
- Improving relevant international law and governance mechanisms



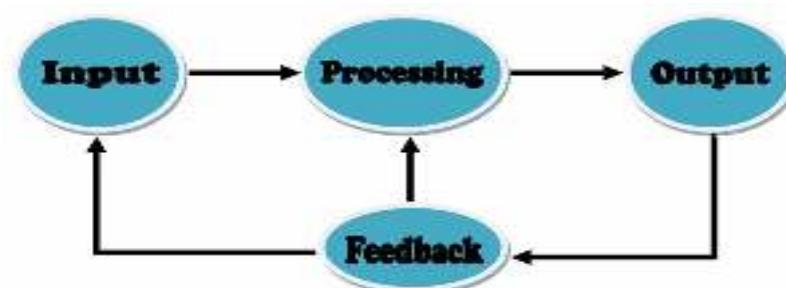
The Blue Economy - Criteria

- **Human needs are addressed** – securing need for food, water, energy, materials, recreation and health, as well as jobs, livelihoods, community life and political stability (*is that human well-being?*)
- **Ecosystem sustainability** – ensuring that resources are grown, harvested, processed, used and recycled in a way that promotes improvement of the biodiversity and productivity of the supporting environment



The Blue Economy - Criteria

- **System approach** – applying tools of systems thinking, modelling and integrated planning inclusive of inter-linkages between and among different economic activities and ecosystems
- **Sustainability standards** – following global standards and guidelines for sustainable business operations, investment and development, with margin for continuous refinement and improvement



The Blue Economy - theme's evolution



- The starting:
 - The “Rio +20” UNCSD – June 2012, focused on two key themes:
 - the further development and refinement of the Institutional Framework for Sustainable Development; and
 - the advancement of the “Green Economy Concerned with this threat...emerge the “Blue Economy”
 - The meeting, in its outcome document, reaffirmed poverty eradication as its key challenge.



The Blue Economy - theme's evolution

- From 2012 to now: various initiatives inter alia:
 - the UNDESA Expert Group meeting on Oceans, Seas and Sustainable Development
 - the work of the Global Ocean Commission,
 - the Global Partnership for Oceans, and
 - the prominence given to oceans and seas

UN 5 years - Action Agenda 2012-2016.



The Blue Economy - theme's evolution

- Coastal and Island developing countries have remained at the forefront of this Blue Economy advocacy,
 - recognizing that the oceans have a major role to play in humanity's future, and
 - that the Blue Economy offers an approach to sustainable development better suited to their circumstances, constraints and challenges.



The Blue Economy - theme's evolution

- The Blue Economy is a developing world initiative pioneered by SIDS (Small Island Development States) but relevant to all coastal states and countries with an interest in waters beyond national jurisdiction.

United Nations Conference on Sustainable Development (UNCSD 2012).



The Blue Economy and SDG14: synergy

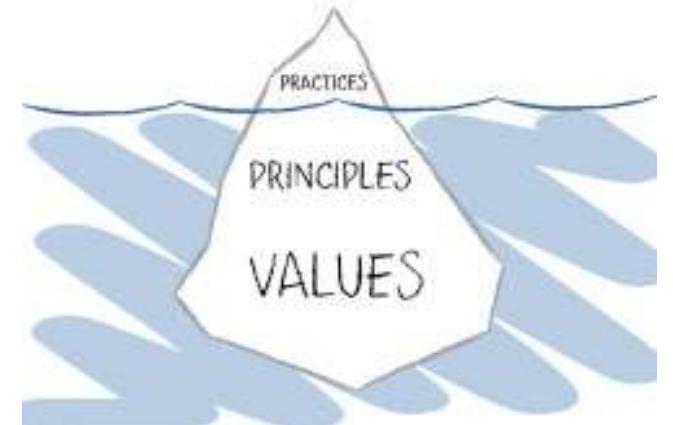
- Of particular importance to the discussion on the blue economy are the Sustainable Development Goals (SDGs), adopted as part of the post-2015 agenda. Importance in Goal 14!



The Blue Economy - principles

- During the past few years, the term “Blue Economy” or “Blue Growth” has surged into common policy usage, all over the world.
- For some, Blue Economy means the use of the sea and its resources for sustainable economic development. For others, it simply refers to any economic activity in the maritime sector, whether sustainable or not.

WWF 2017



A SUSTAINABLE BLUE ECONOMY is a marine-based economy that ...

- Provides social and economic benefits for current and future generations,
- Restores, protects and maintains the diversity, productivity, resilience, core functions, and intrinsic value of marine ecosystems,
- Is based on clean technologies, renewable energy, and circular material flows.

Finally.... A definition!!!!



Making sure the blue economy is green

Jay S. Golden, John Virdin, Douglas Nowacek, Patrick Halpin, Lori Benner and Pawan G. Patil

Given the growing and seemingly limitless capacity to industrialize the oceans, there is a need to reimagine how to effectively measure, monitor and sustainably manage this seventy-one per cent of the Earth's surface.

We are now at an inflection point in history, where we no longer

capacity to regulate international waters; and (3) the ability of industrial and financial

recommendations for key stakeholders, falling into three key areas: governance,

A SUSTAINABLE BLUE ECONOMY

is governed by public and private processes that are ...

- Inclusive,
- Well-informed, precautionary and adaptive,
- Accountable and transparent
- Holistic, cross-sectoral and long-term,
- Innovative and proactive.



To create a SUSTAINABLE BLUE ECONOMY,
public and private actors must ...



- Set clear, measurable, and internally consistent goals and targets for a Sustainable Blue Economy,
- Assess and communicate their performance on these goals and targets,
- Create a level economic and legislative playing field that provides the Blue Economy with adequate incentives and rules,
- Plan, manage and effectively govern the use of marine space and resources, applying inclusive methods and the ecosystem approach, (*coastal EEZ and MEP?*)

To create a SUSTAINABLE BLUE ECONOMY, public and private actors must ...

- Develop and apply standards, guidelines and best practices that support a Sustainable Blue Economy,
- Recognize that the maritime and land-based economies are interlinked and that many of the threats facing marine environments originate on land,
- Actively cooperate, sharing information, knowledge, best practices, lessons learned, perspectives, and ideas, to realize a sustainable and prosperous future for all.



Components of the Blue Economy			
Type of Activity	Ocean Service	Industry	Drivers of Growth
Harvest of living resources	Seafood	Fisheries	Food Security
		Aquaculture	Demand for Protein
	Marine biotechnology	Pharmaceuticals, chemicals	R&D for healthcare and industry
Extraction of non-living resources, generation of new resources	Minerals	Seabed mining	Demand for minerals
	Energy	Oil and gas	Demand for alternative energy sources
		Renewables	
	Fresh water	Desalination	Demand for fresh water
Commerce and trade in and around the oceans	Transport and trade	Shipping	Growth in seaborne trade; International regulations
		Port infrastructure and services	
	Tourism and recreation	Tourism	Growth of global tourism
		Coastal Development	Coastal urbanization Domestic regulations
	Ocean monitoring and surveillance	Technology and R&D	R&D in ocean technologies
Response to ocean health challenges	Carbon Sequestration	Blue Carbon	Growth in coastal and ocean protection and conservation activities
	Coastal Protection	Habitat protection and restoration	
	Waste Disposal	Assimilation of nutrients and wastes	(World Bank 2017)

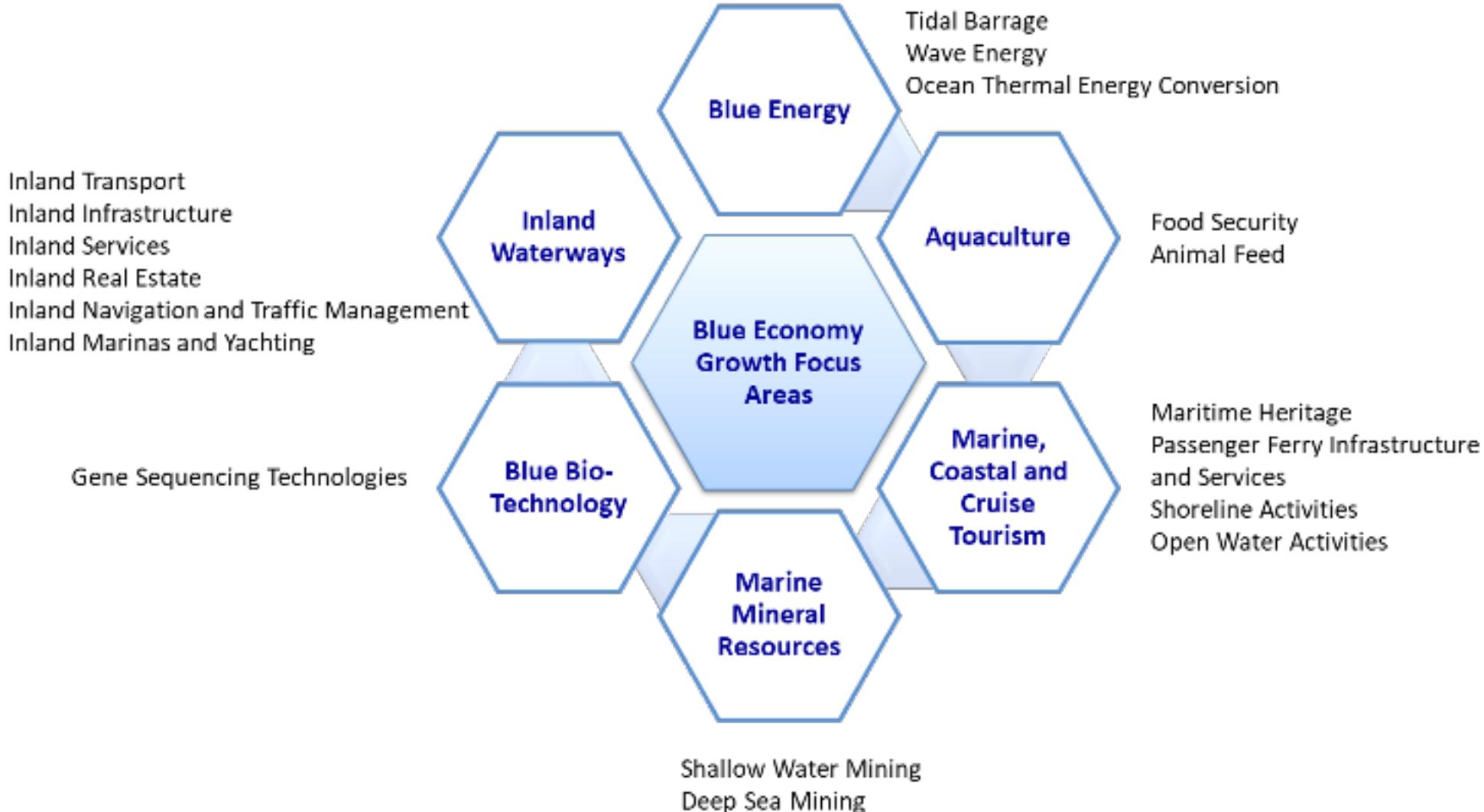


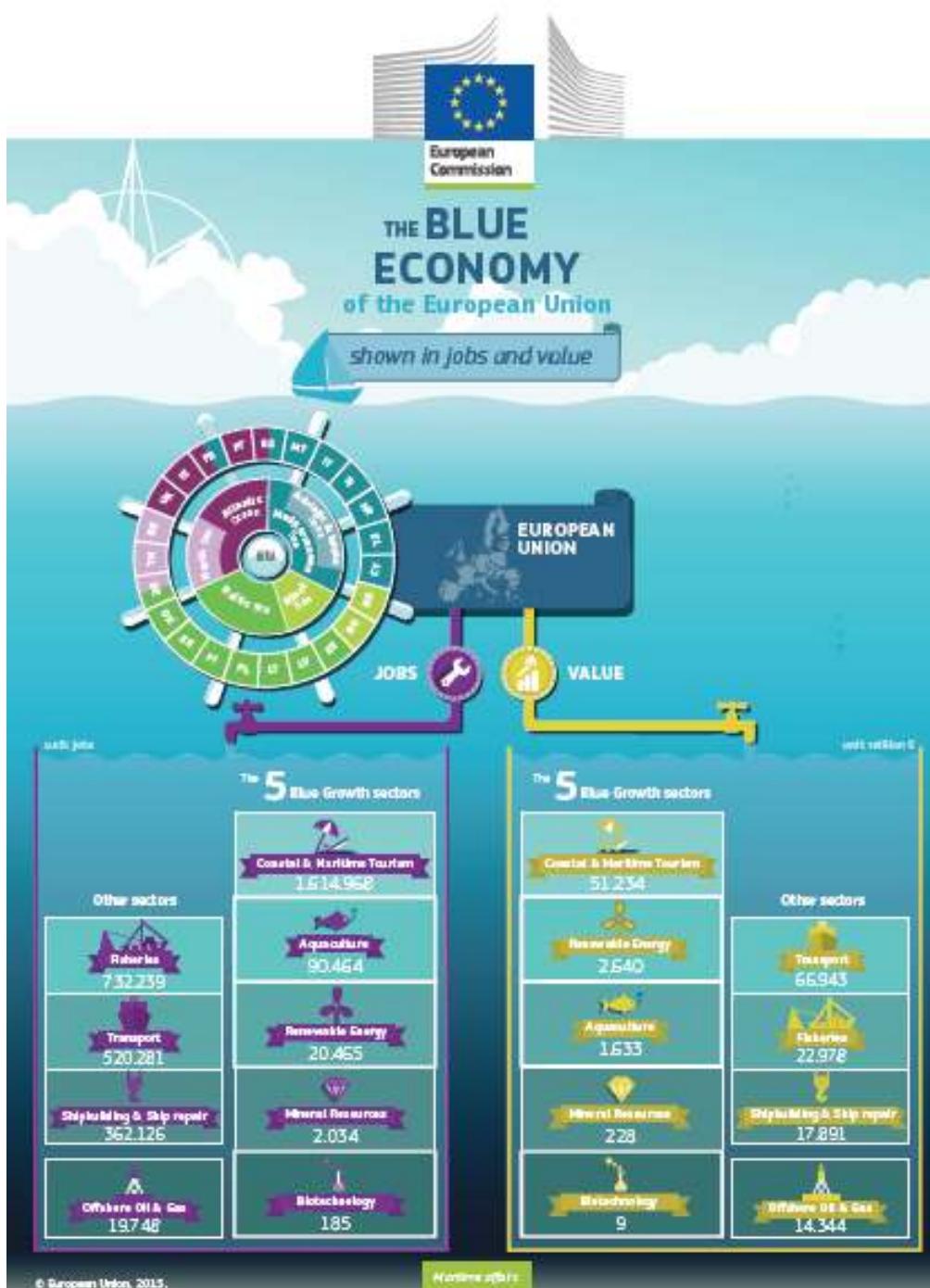
The Blue Economy - Sectors

- Coastal Tourism
- Offshore Oil and Gas
- Deep Sea Shipping
- Short Sea Shipping
- Yachting and Marinas
- Ferry Services
- Cruise Tourism
- Fisheries
- Inland Waterways Transport
- Inland Waterways Tourism
- Inland Waterways Real Estate
- Coastal Protection
- Offshore Energy
- Monitoring and Surveillance
- Biotechnology
- Desalination
- Aquatic Production
- Marine Mining



The Blue Economy - Growth Focus Areas





European Commission

BLUE GROWTH

71% of the Earth surface is WATER

Why?

Blue Growth is the European Commission's initiative to further harness the potential of Europe's oceans, seas and coasts for:

- Jobs
- Value
- Sustainability

Focus Area

Five sectors with high potential for sustainable Blue Growth and to be further developed:

- Renewable energy
- Mineral resources
- Aquaculture
- Coastal & Maritime tourism
- Blue economy

other sectors of the blue economy crucial for value & jobs

- Shipbuilding & Ship repair
- Transport (cargo & ferry)
- Fisheries
- Offshore oil & gas

© European Union, 2013.

Moderator





INVESTING IN THE BLUE ECONOMY

Unlocking the potential of the ocean to create jobs and boost the economy

If the ocean were a country, it would be the world's **SEVENTH LARGEST ECONOMY**.

The situation



The output of the ocean is an estimated **€1.3 trillion**, forecast to double by 2030.

Around **350 million jobs** worldwide are linked to the ocean.¹

Opportunities

In addition to fisheries, the blue economy has growth and job-creating potential in many sectors, not least in developing countries.

Aquaculture

Aquaculture can be a sustainable option for seafood production.



Aquaculture accounts for more than 50% of the world's seafood production for human consumption.²

Coastal tourism

Tourism is the largest employer in the blue economy and provides valuable income for coastal communities world-wide.

Increase in the number of international tourists visiting small island developing states (SIDS) between 2000 and 2013³



Moving
Afloat
and Farther

Offshore renewable energy

Sustainable marine energy can play a vital role in social and economic development, as well as in climate adaptation and mitigation.



Ocean energy is one of the answers to meeting the growing demand for clean electricity.



Blue biotechnology

Blue biotechnology is a challenging but promising industry. Results are applied and marketed in a wide range of sectors.



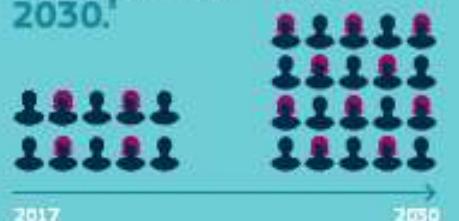
Mangrove restoration

1/4 of the world's mangroves have been destroyed by human activity. Restoration schemes are underway.

- The restoration of mangrove ecosystems is a cost-effective way to help ensure food security for many coastal communities.
- Mangroves help protect coastal areas from destructive storms, erosion and tsunamis.
- Annually, mangroves sequester over 20 million tons of carbon – helping combat climate change.²

Offshore renewable energy

The number of jobs in Europe's ocean renewable energy sector is expected to double towards 2030.¹



90%

of the world's sea-based wind turbines are currently in Europe:



To flourish, the blue economy needs



More strategic investment in blue growth.



Better access to finance for the maritime sector.



More cooperation between public authorities, communities, researchers and private investors to ensure sustainable development.



Improved maritime skills & qualifications.



Better maritime spatial planning and more data sharing.

Be part of the drive to unlock the potential of the blue economy in a smart, sustainable and inclusive way.

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Sources: 1. UK 2. UNRISD 3. Molti Bank
4. UN Environment Programme 5. EU

#OurOcean
ourocean2017.org
#EU_Oceans
@OurOceanEU

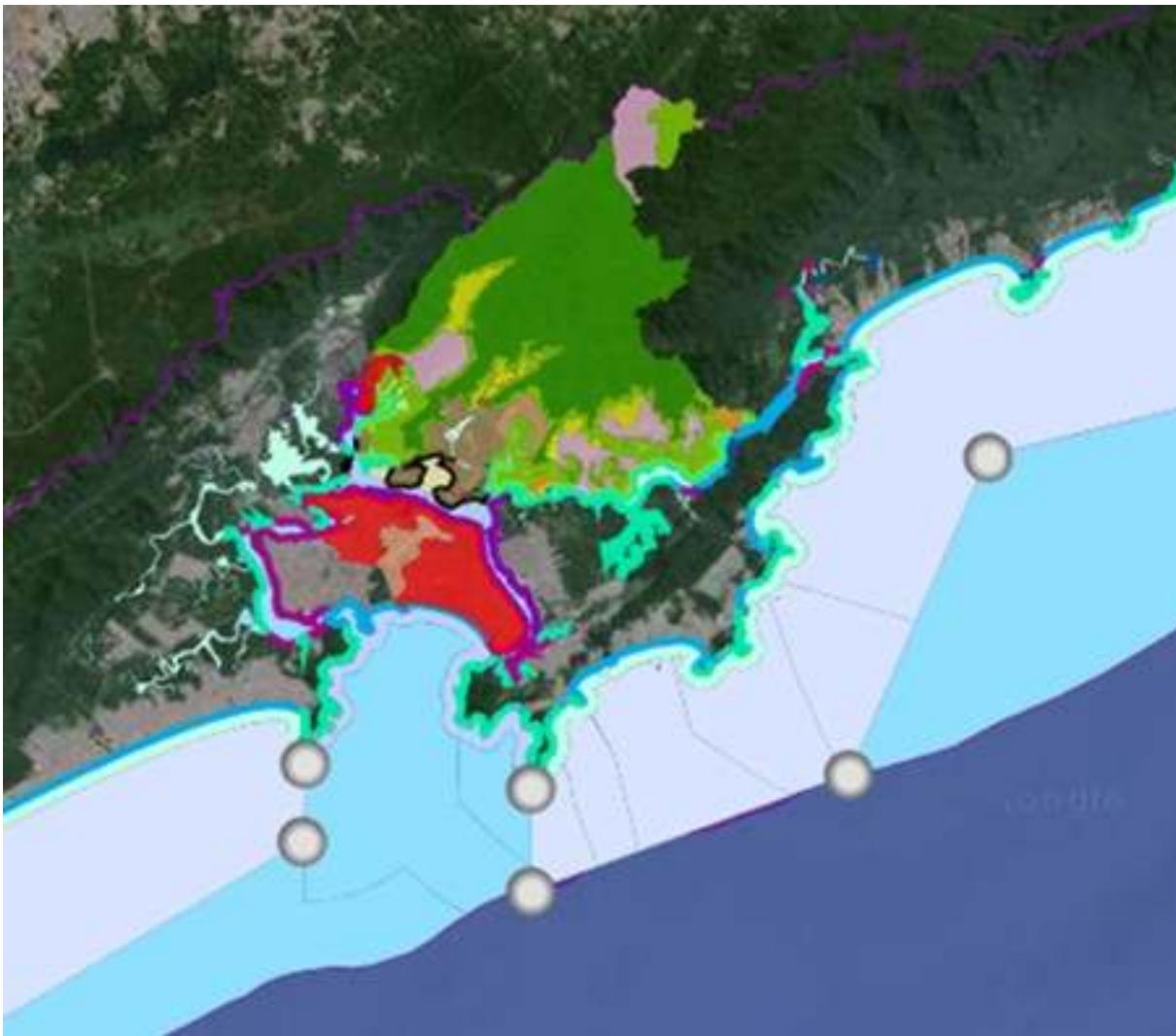




Ecosystem Perspective for Ocean and Coastal Management – Be sure that Blue Economy is a Green one.....



Coastal ZEE



Recent and Current Situation. Difficult Execution, Incipient Implementation !!!

- Problems persist !!!
- The execution is very difficult !!!
- Technical and governance issues.
- Do we need a new way?
- Should we use new opportunities?



General Finding !!

The process should be predominantly ...

Political, Participatory and Technical

Integrated

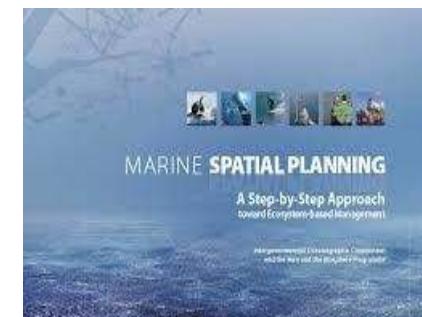
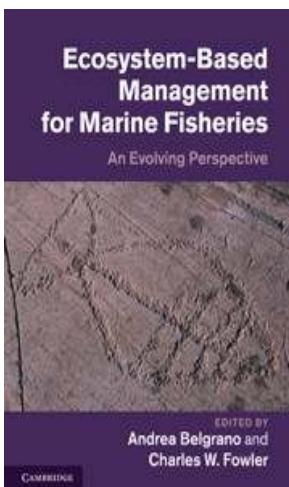
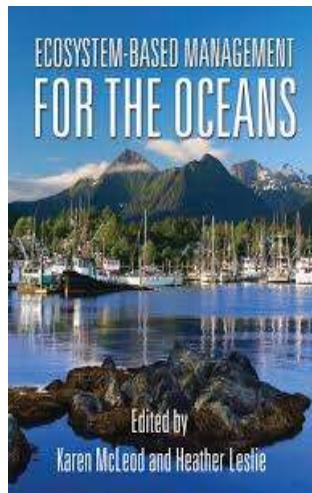
The process is predominantly ...

Bureaucratic and Legalistic

Focused on sectors



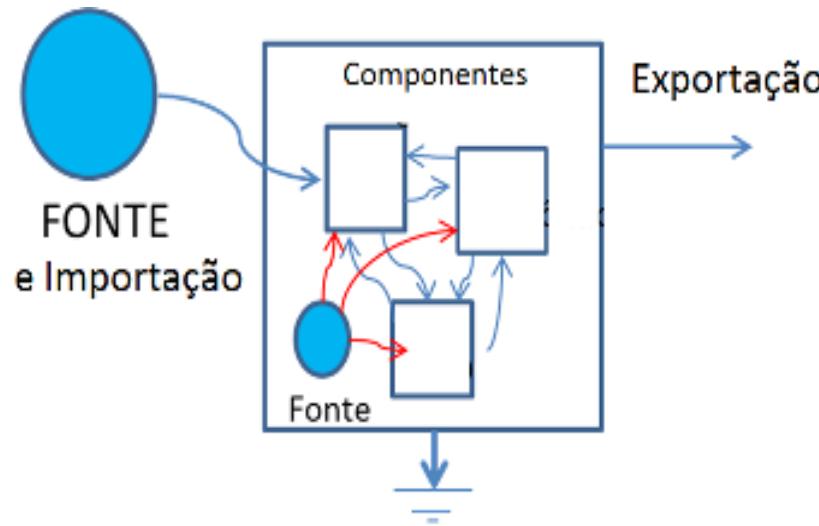
What does the world tell us? Ecosystem-Based Management



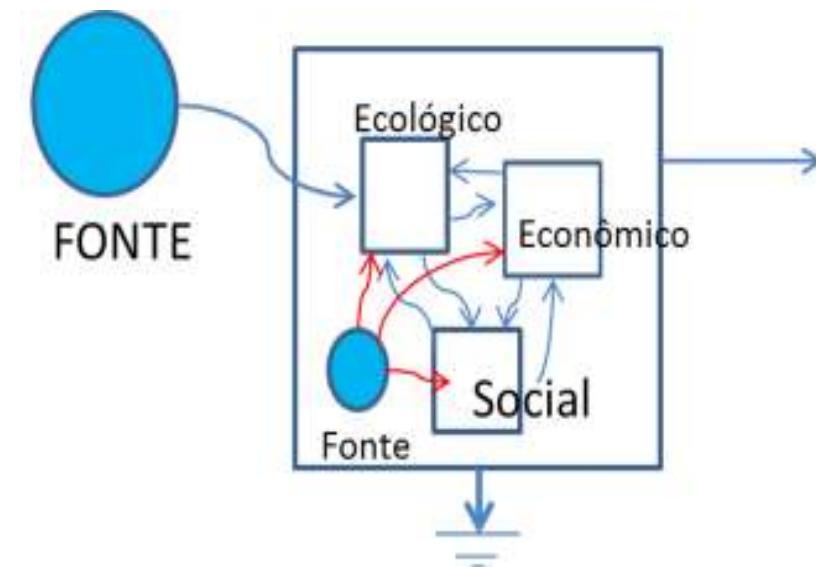
Ecosystem is a system !!!



□ Generally



□ Ecosystem



What is the role of ecosystems?

- For society (or humanity)?
- They are life support systems
- Regulate the weather
- Provide the necessary Ecosystem Services



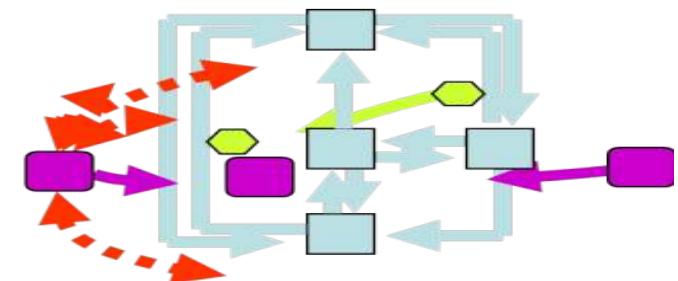
Guaranteed by ecosystem services classified as ...

- **Provisioning services:** food, fuel, fiber, water, etc.
- **Regulatory services:** biological, sedimentation patterns, damping of disturbances, etc.
- **Support services:** primary production, soil formation
- **Cultural services:** aesthetic, recreational, educational, etc.

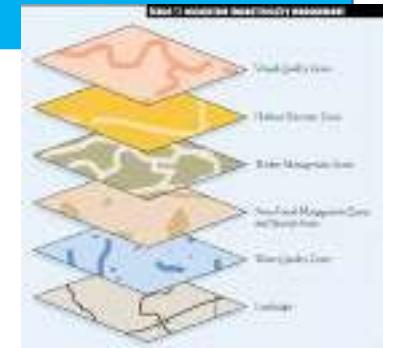


After all, what do we want and need to have from
Ecosystem Based Management?

- Preserving Ecosystem Services and ECOLOGICAL FUNCTIONS with a focus on Intergenerational Social and Environmental Quality
 - In so doing, we would secure the advantages for Nature and Society.
 - Social and Environmental Sustainability can be understood as the maintenance of ES and functions, and HW in a temporal scale



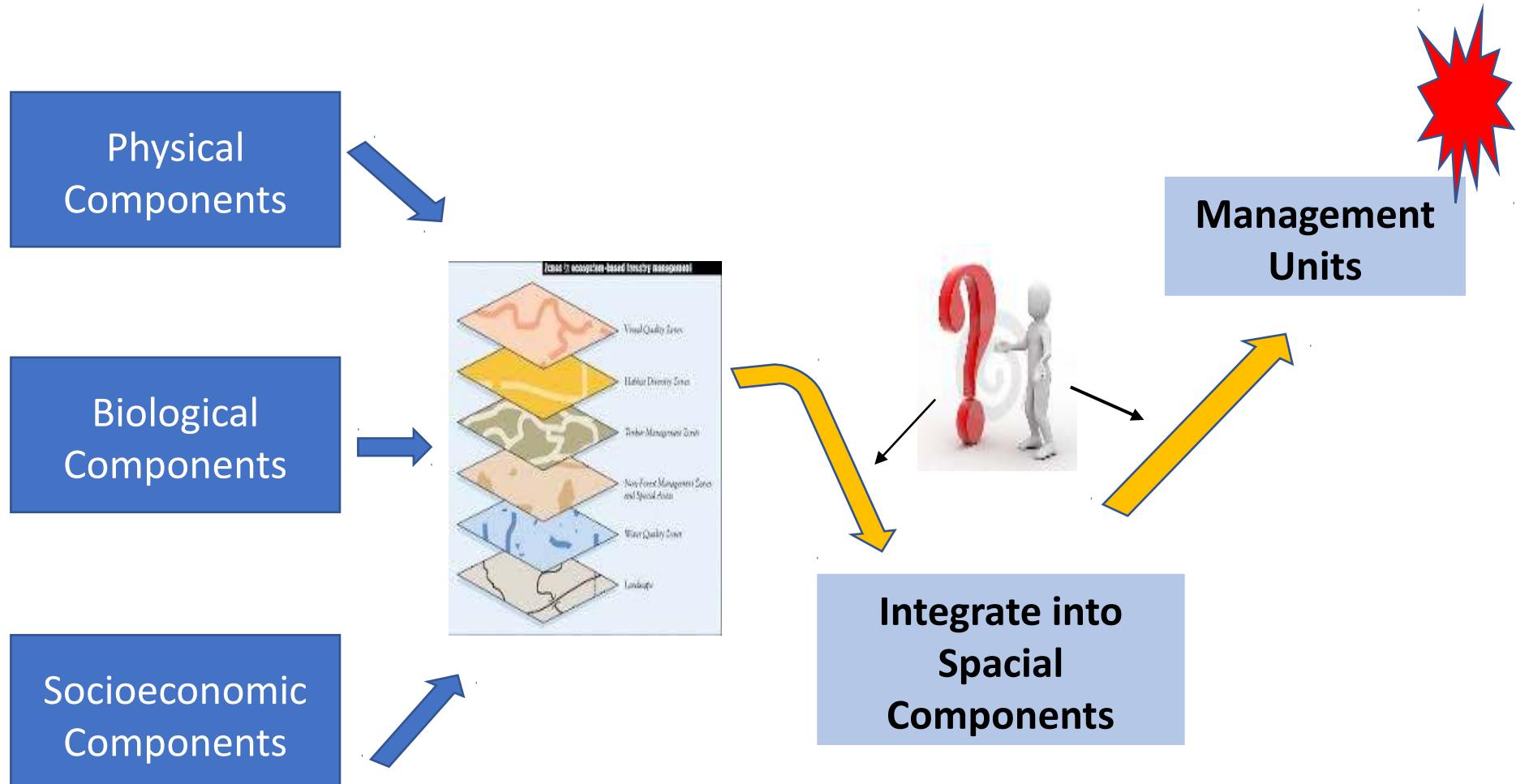
But do we have the necessary "Ecosystemic Basis" of marine and coastal systems?



- In general NOT !!
- In general, we have a considerable but incomplete knowledge of various components and processes of marine and coastal environments in a non-integrated or ecosystemic way.
- It is the basis of our environmental policy! (EIAs, Management Plans, CEEZ - physical, biological, socioeconomic aspects)



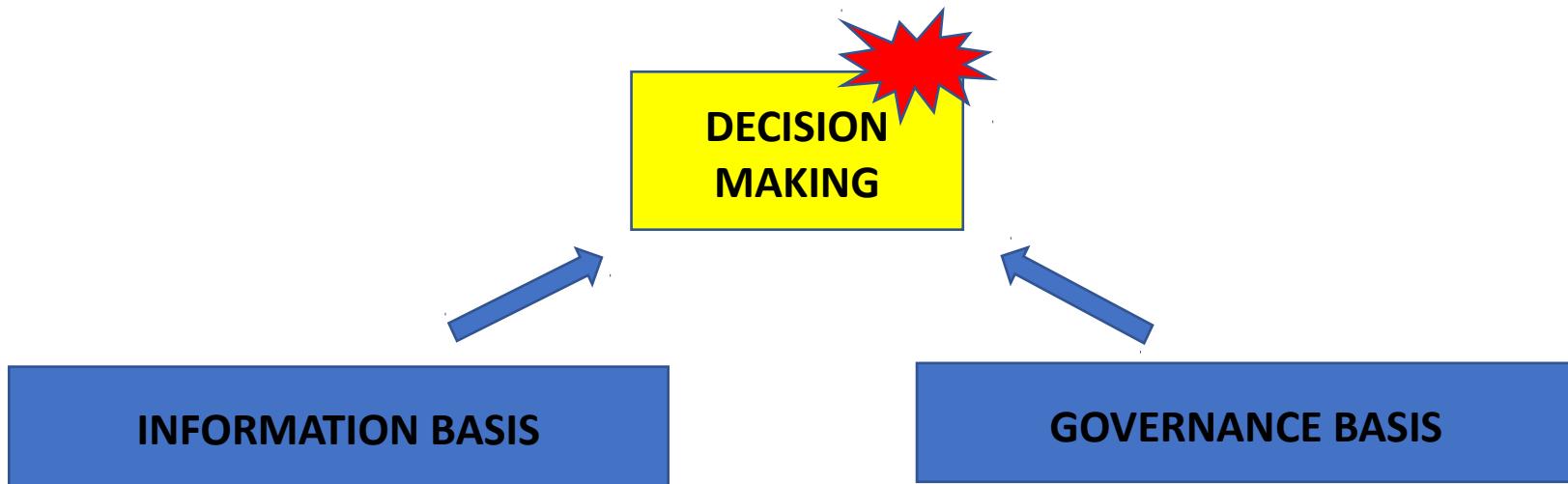
Business as usual !!



Where are the difficulties ??

- (1) Decisions are not correct
- (2) Inadequate implementation

Alternative?



A ROAD MAP TO EBM

- (1) Identify ecosystems as Management Units
- (2) Map, model, simulate
- (3) Identify Ecosystem Services and the Risk of Losing them
- (4) Define Values and Quality (social perception)

- (5) Identify the "management spaces"
- (6) Integrate with Policies and Instruments

Information Basis

Governance





Simples para ser útil: base ecossistêmica para o gerenciamento costeiro

Simple to be Useful: Ecosystem Base for Coastal Management

Milton Lafourcade ASMUS^{1*}, João NICOLODI¹, Martinez Eymael Garcia SCHERER², Kahuam GIANUCA¹, Julliet Correa COSTA¹, Lorena GOERSCH¹, Gabriel HALLAL¹, Kamila Debian VICTOR¹, Washington L. S. FERREIRA¹, Julia N. A. RIBEIRO¹, Clara da Rosa PEREIRA¹, Bruna T. BARRETO¹, Luciano Figueiredo

Ecosystem-Based Knowledge and Management as a tool for Integrated Coastal and Ocean Management: A Brazilian Initiative

Marinez E.G. Scherer^{†*} and Milton L. Asmus[†]

[†]Laboratory of Integrated Coastal Management (LAGECI),
Department of Geosciences
Federal University of Santa Catarina
Florianópolis, Brazil



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ABSTRACT

Scherer, M.E.G. and Asmus, M.L., 2016. Ecosystem-Based Knowledge and Management as a tool for Integrated Coastal and Ocean Management: A Brazilian Initiative. In: Vila-Concejo, A.; Bruce, E.; Kennedy, D.M., and McCarroll, R.J. (eds.), *Proceedings of the 14th International Coastal Symposium* (Sydney, Australia). *Journal of Coastal Research*, Special Issue, No. 75, pp. 690-694. Coconut Creek (Florida), ISSN 0749-0208.

The Ecosystem-Based Management (EBM) brings knowledge highlighting the importance of ecosystem services (ES) as the key factors supporting the environment, social and economic integrity, as well as human wellbeing. EBM could represent the change from public policies greatly focused on normative and bureaucratic components to new policies predominantly based on the understanding of ecosystem processes and the regulation of human activities. Nevertheless, most of the coastal zone management initiatives in Brazil lack the necessary ecosystem based information to fully support EBM. They also often don't integrate the ecosystem-based information into the management system in an appropriate way. This paper proposes a roadmap model to produce the ecosystem-based information and its application for coastal policies. This involves the identification of (1) dominant ecosystems and ecosystem services; (2) benefits for human wellbeing; (3) stakeholders affected; (4) main pressure, human or

The experimental CASE on the development of the methodology

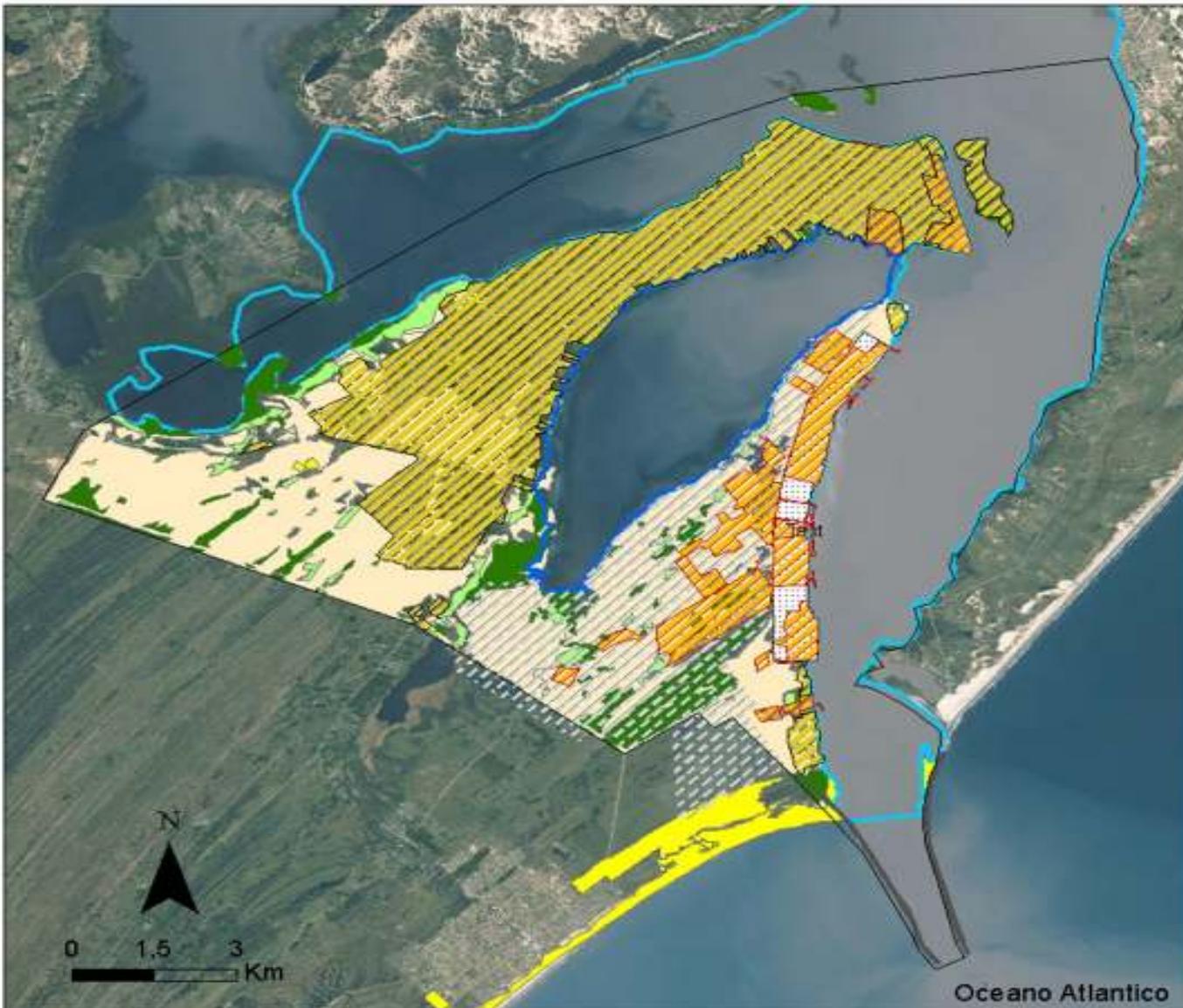


(1) Define ecosystems

coastal areas, coastal lagoons, intertidal plains, seagrass beds,
shallows, intermediate zones, canals, estuarine beach, jetties,
agricultural systems, urbanized areas, industrial areas, port area,
forestry, wind farms



(2) Map the Ecosystems



Ecossistemas em
área do Estuário da
Lagoa dos Patos

- Limite Área de Estudio
- Zona Urbana
- Zona Industrial/Portuária
- Limite terminal Superporto
- Limite Distrito Industrial
- Saco da Mangueira
- Banhados e Marismas
- Mata Nativa
- Molhes
- Baixo Estuário
- Dunas e Parias
- Campos Litoraneos

Sistema de Coordenadas
Geográficas
Datum WGS 84
proyección UTM



(3)- Matrix of Ecosystems and Services

		Baixo Estuário da Lagoa dos Patos - BELP		benefícios	atores
ecossistemas	classificação	serviços			
marismas	suporte	área de refúgio/base para biodiversidade/berçario/ciclagem de nutriente			
		produção de biomassa/fibras vegetais			pescador artesanal/pequeno agricultor
		controle de inundação		pesca artesanal/usos na agricultura	comunidade local
	regulação	controle de erosão		segurança para acupação adjacente	comunidade local
		filtragem de sed. e nutr.		segurança para aocupação adjacente	comunidade local
	cultural	cenário		qualidade da água	comunidade local, turista/veranista, instituições de ensino, ONGs

Asmus, Conde, Polette, 2013



Coastal Dunes



- Service: sediment stocks (support)
 - Benefit: maintenance of the coastline
 - Stakeholders: local community
-
- Service: scenery (cultural)
 - Benefit: leisure / tourism / environmental education
 - Stakeholders: local community, tourist / vacationers, educational institutions, NGOs



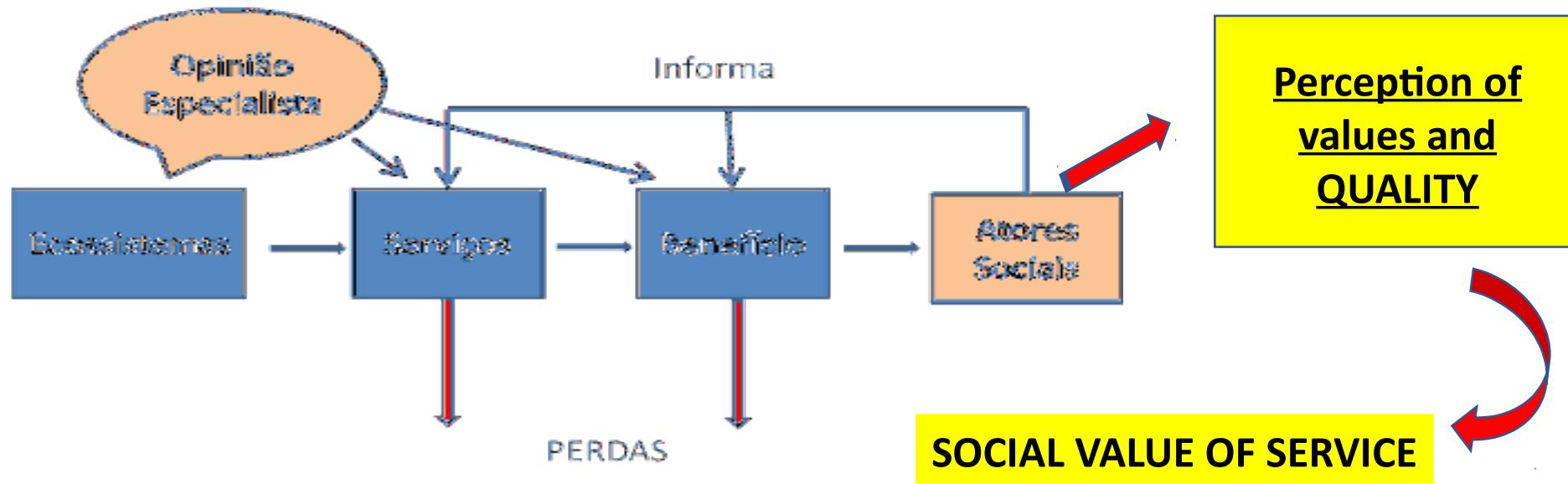
Agricultural Systems



- Service: biomass production (provision)
 - Benefit: food production
 - Stakeholders: family farmer
-
- Service: economic regulation (regulation)
 - Benefit: rural social relations
 - Stakeholders: rural community

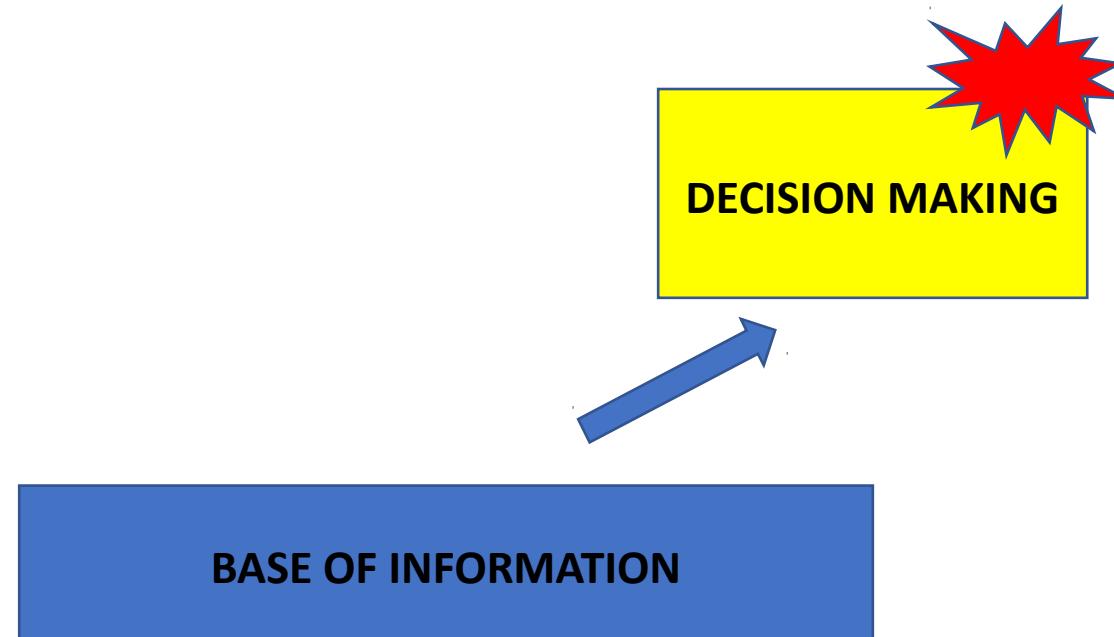


(4) Value and Quality of Ecosystem Services

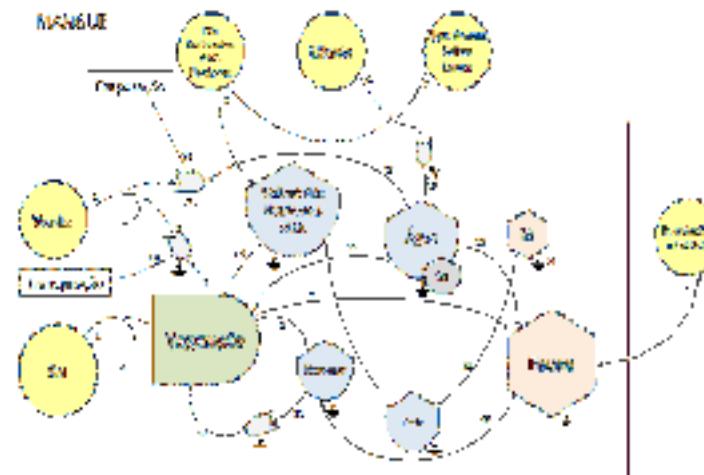
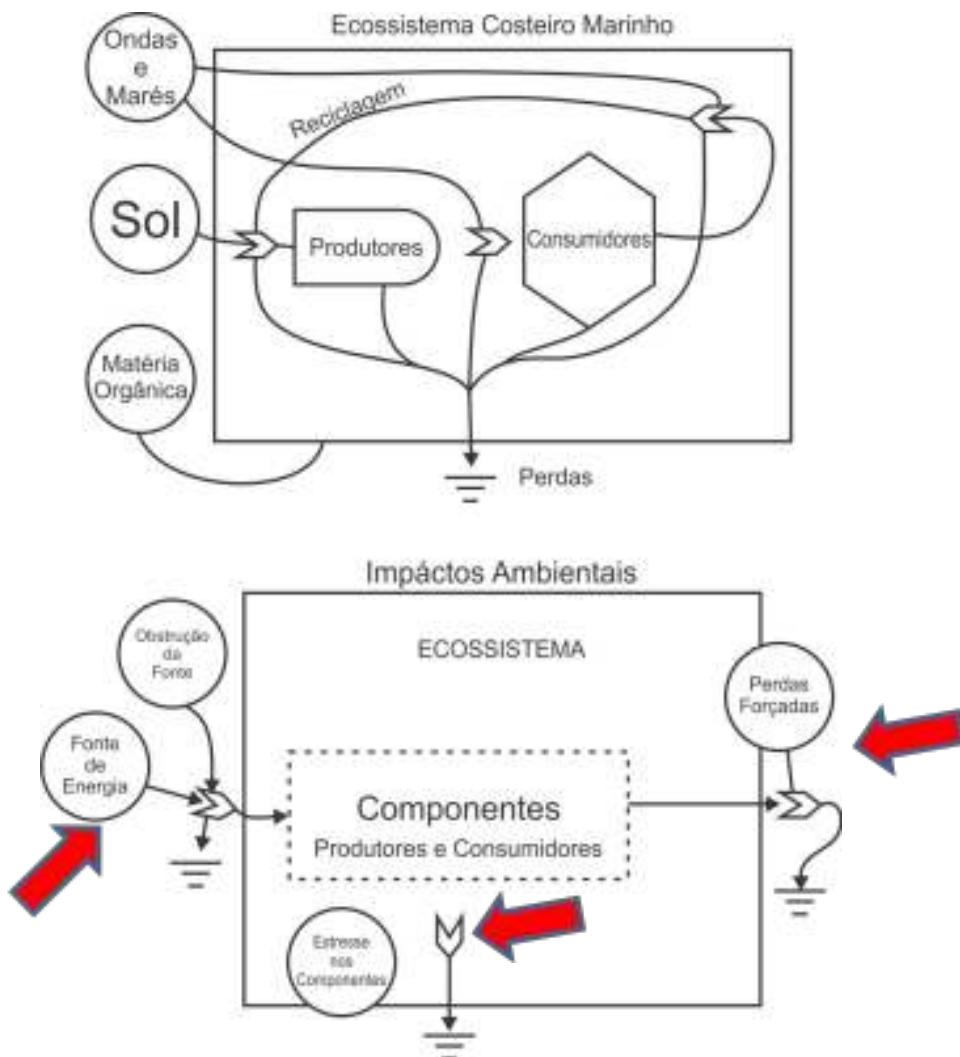


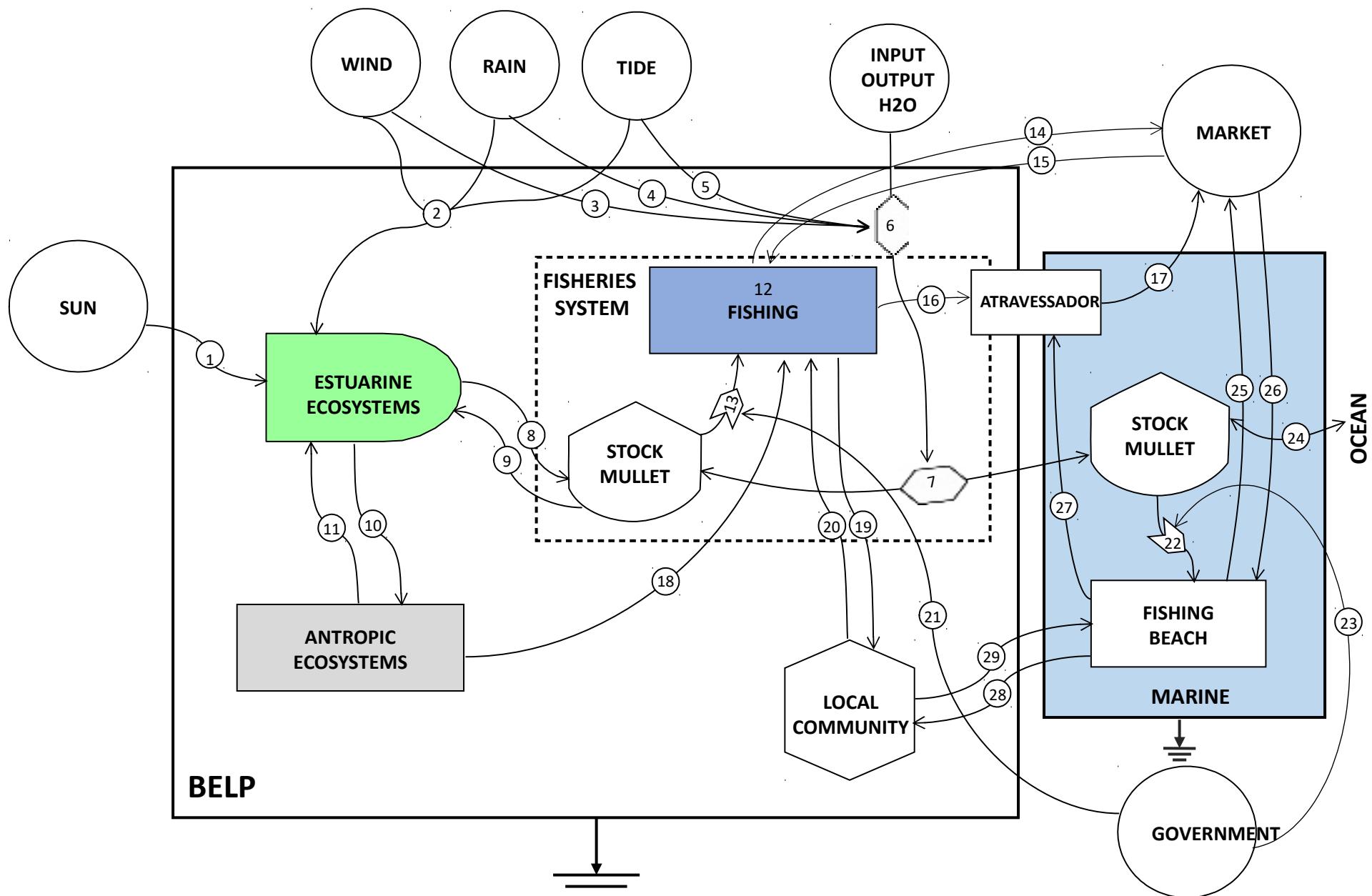
(5)- Management Spaces

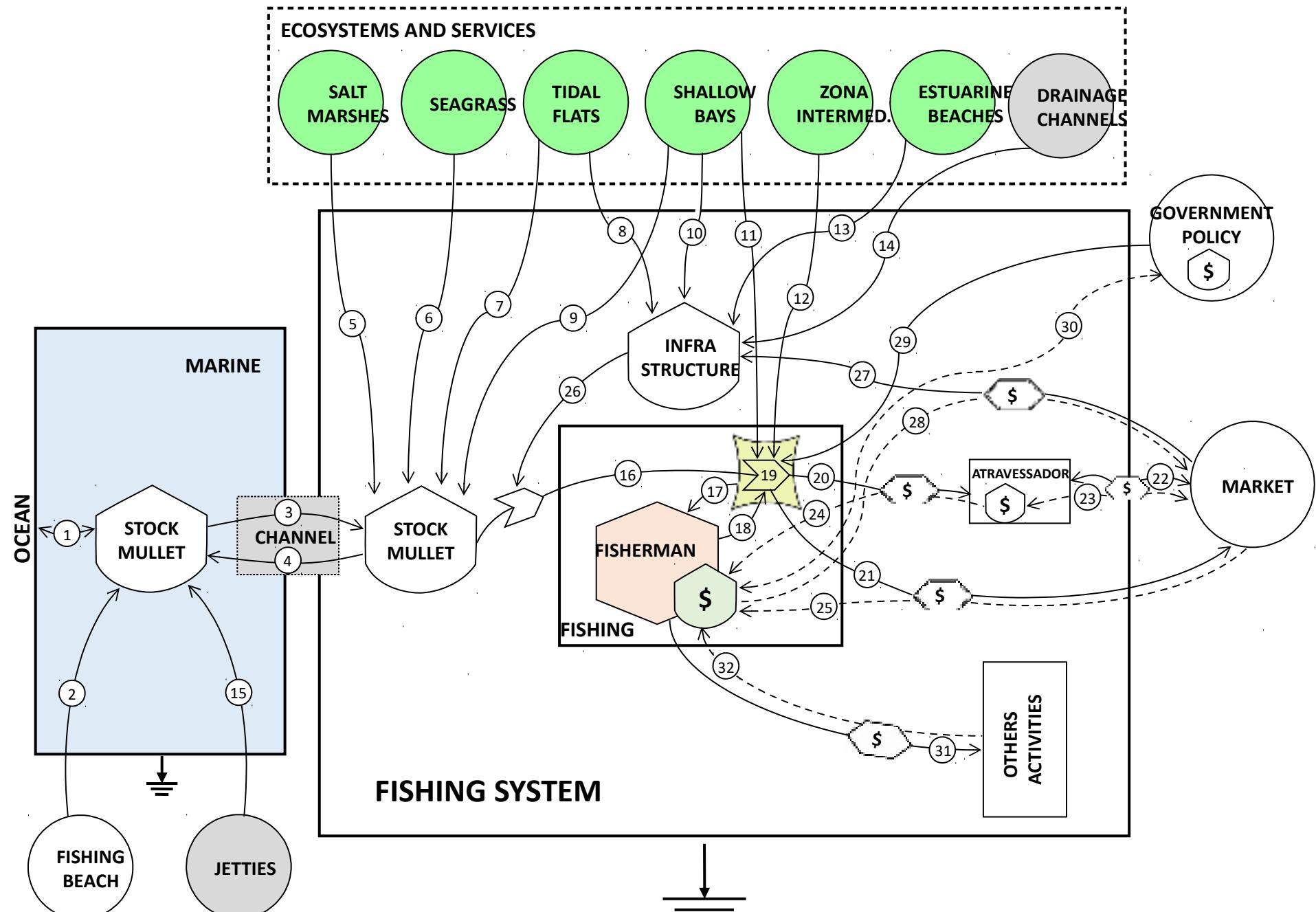
- (1) The Systemic Information Base involves Processes.
- (2) It is focused on the Knowledge of Mechanisms



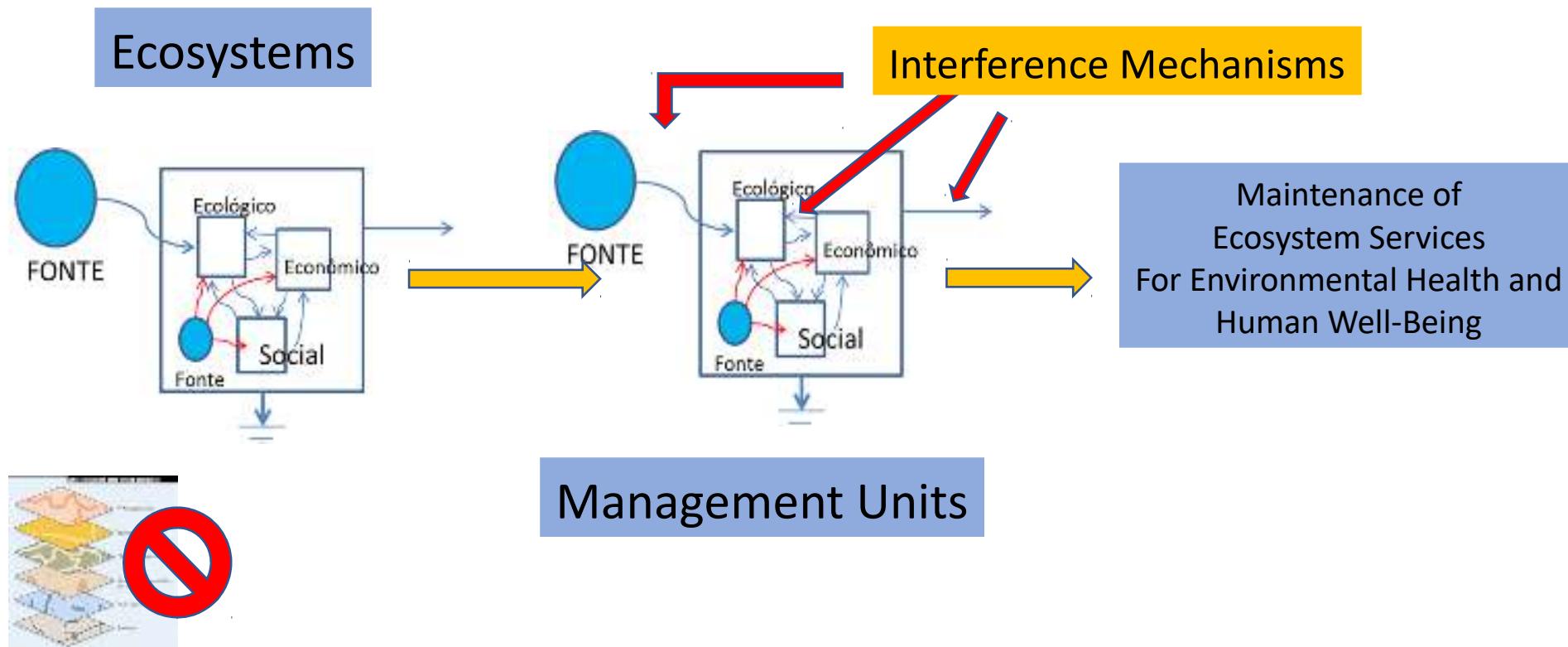
How do ecosystems lose functions and services?







Proposed Logic / EBM



(6)- Policies and Instruments Matching with GBE

- Exemples
- CEEZ translated as:
- The organization of ecosystems, conditioning the "economic" actions to the proper use of ES and the "ecological" actions aimed at the conservation of ES.



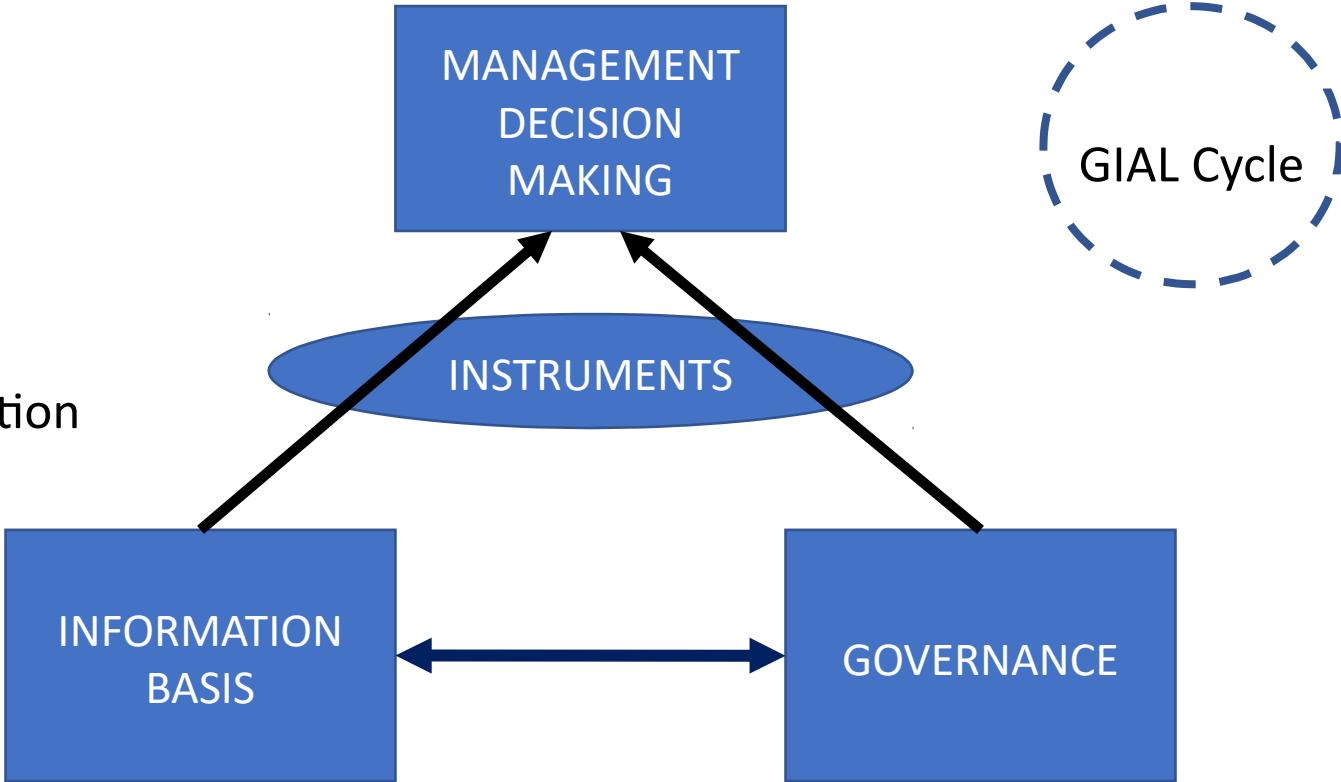
Policies and Instruments Matching with GBE

- Exemples
- Environmental Management Plans translated as:
- Coordinated actions towards the Use and Preservation of ESs, and Mitigation and Compensation of their Losses.
- Environmental Compensation as ES Compensation



DPSIR

Fishing
Tourism
Port Activity
Urban Occupation
and so on



ECOSYSTEM-BASED MANAGEMENT

- Ecosystems
- Services
- Stakeholders

- Institutions
- Participation
- Legislation
- Policies
- Perceptions
- Resources





Concluding ...





□ *Milton L. Asmus*
□ *Institute of Oceanography*
□ *Graduate Programa on Coastal
Management*

Federal University of Rio Grande-FURG

□ docasmus@furg.br

