

# Our Last Blue Planet

**71%  
Water**



**29%  
Earth**



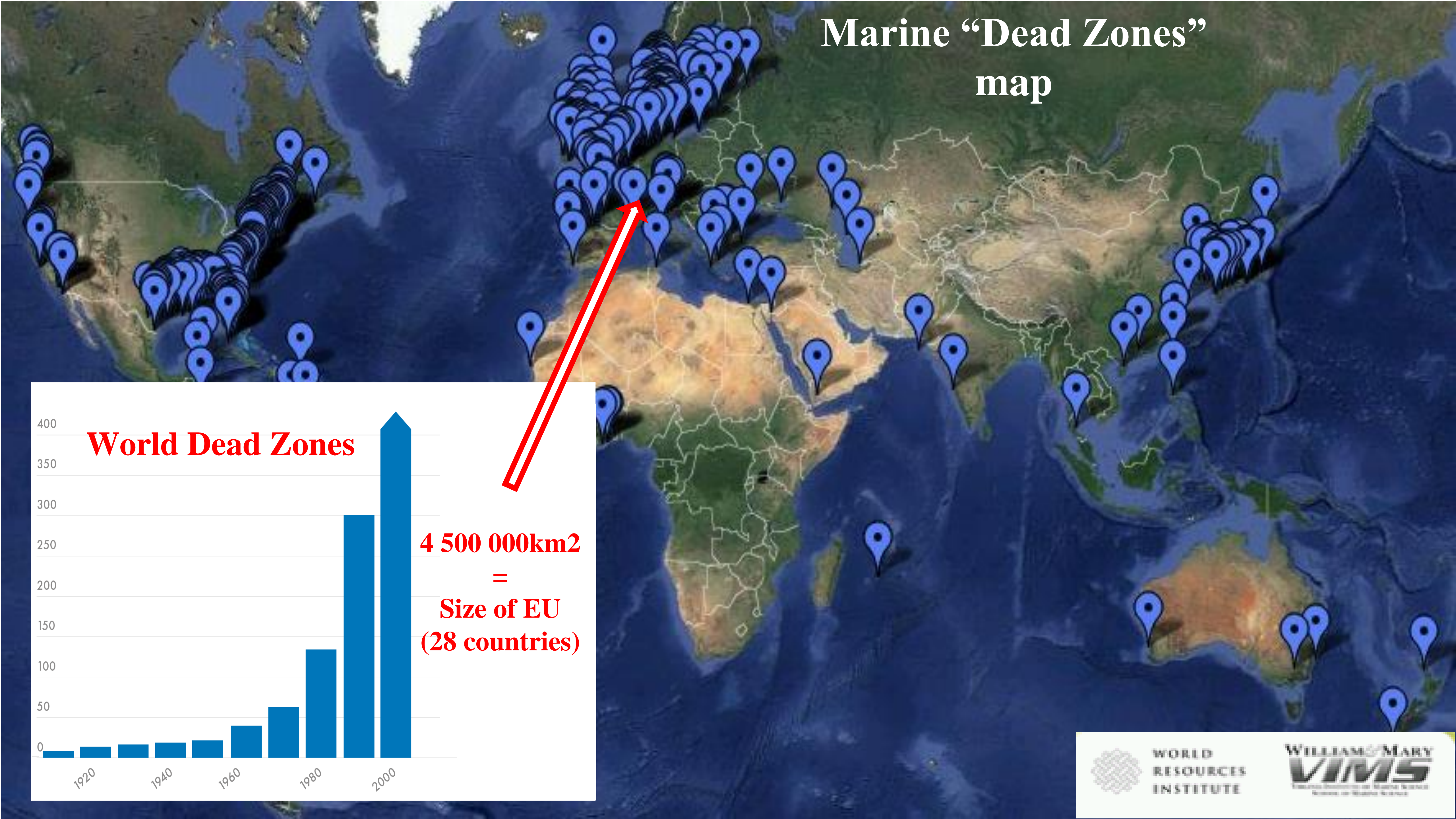
# Mass extinction of living species on Earth

	Percent extinction	Species	Before (yr.)	Reason
I	85%	All species	440 M	Climate
II	83%	Sea species	364 M	Climate
III	95%	All species	251.4 M	Volcanos
IV	80%	All species	199.6 M	Volcanos
V	76%	Dinosaurs	65.5 M	Asteroid

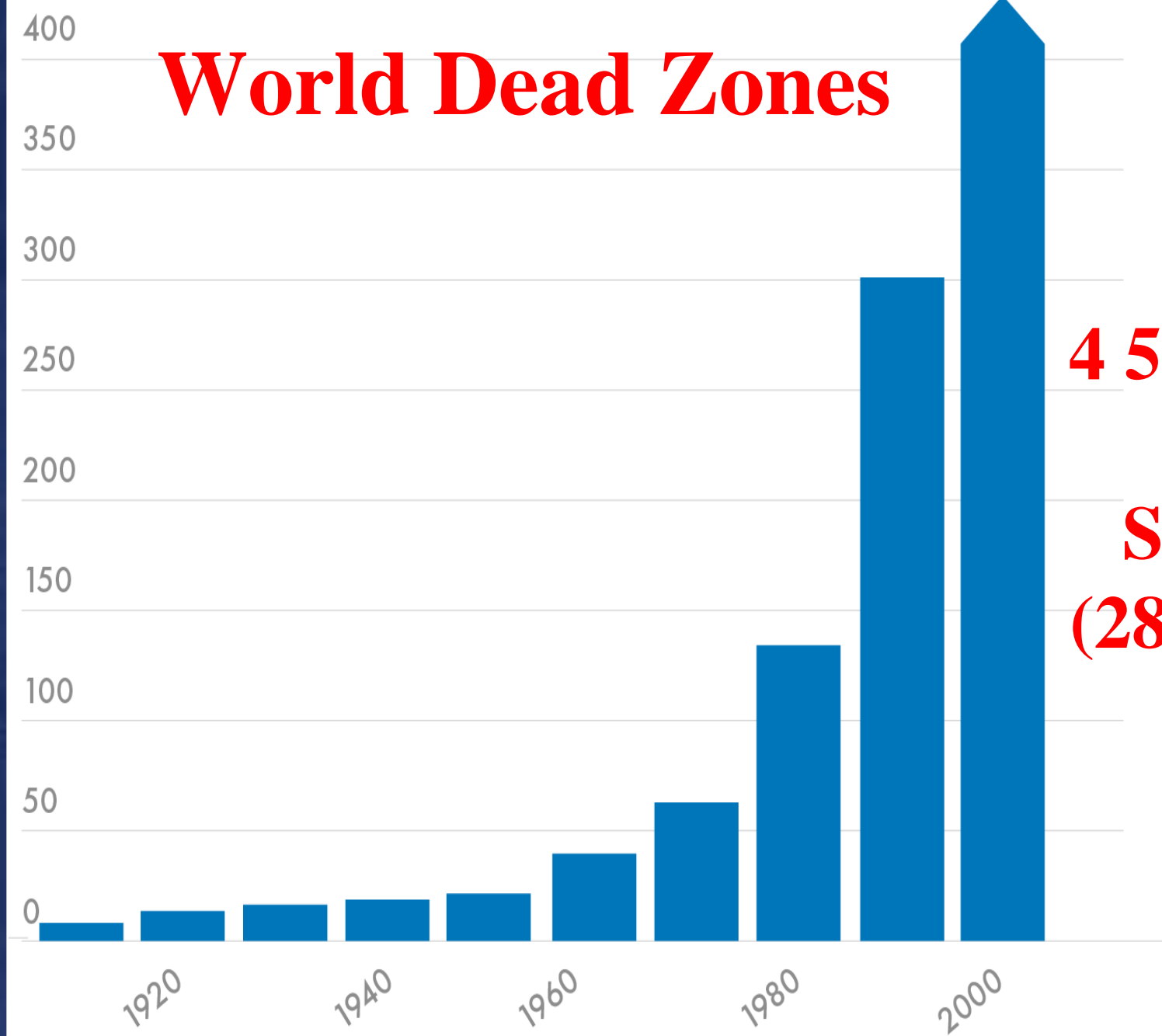
VI	36%	Marine species	Now	Human
	38%	Terrestrial species	Now	Human
	81%	Freshwater species	Now	Human
	67%	All Animal Species	2020	Human
	?? %	Flora & Fauna	2100	?????



# Marine "Dead Zones" map



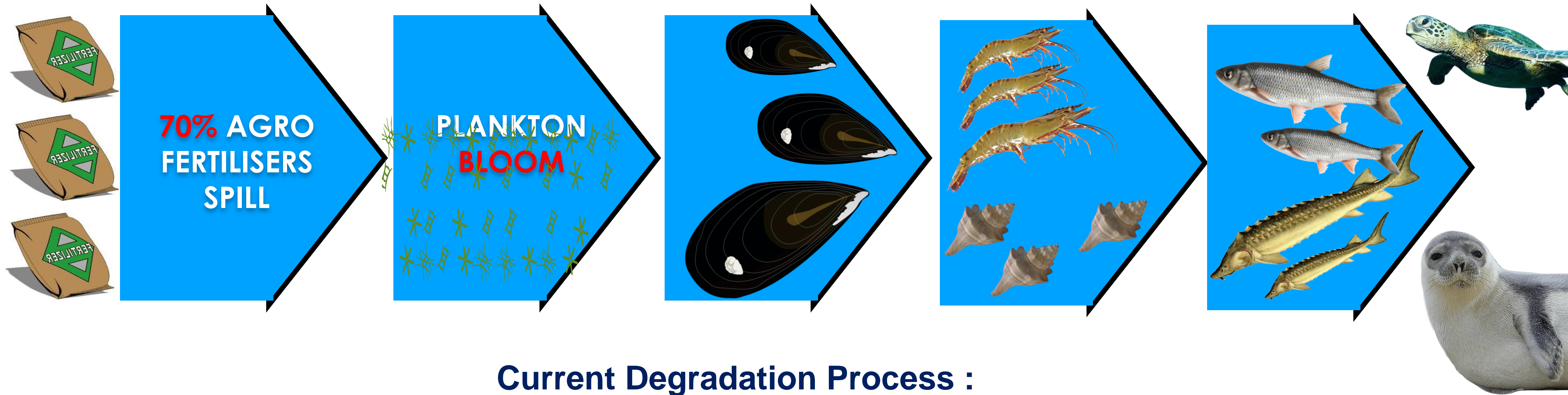
## World Dead Zones



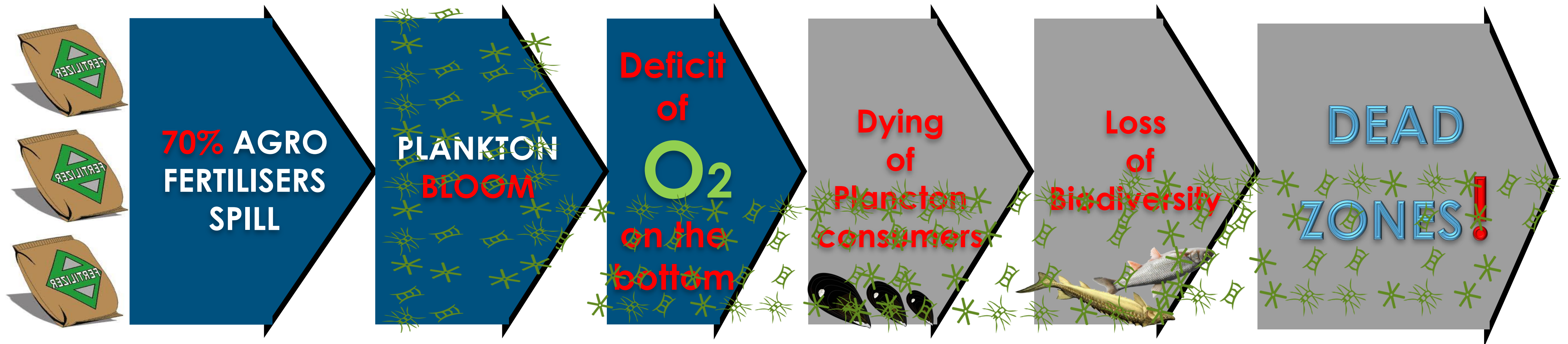
**4 500 000km<sup>2</sup>**  
**=**  
**Size of EU**  
**(28 countries)**



# With enough Mussel Reef habitats



# Current Degradation Process :



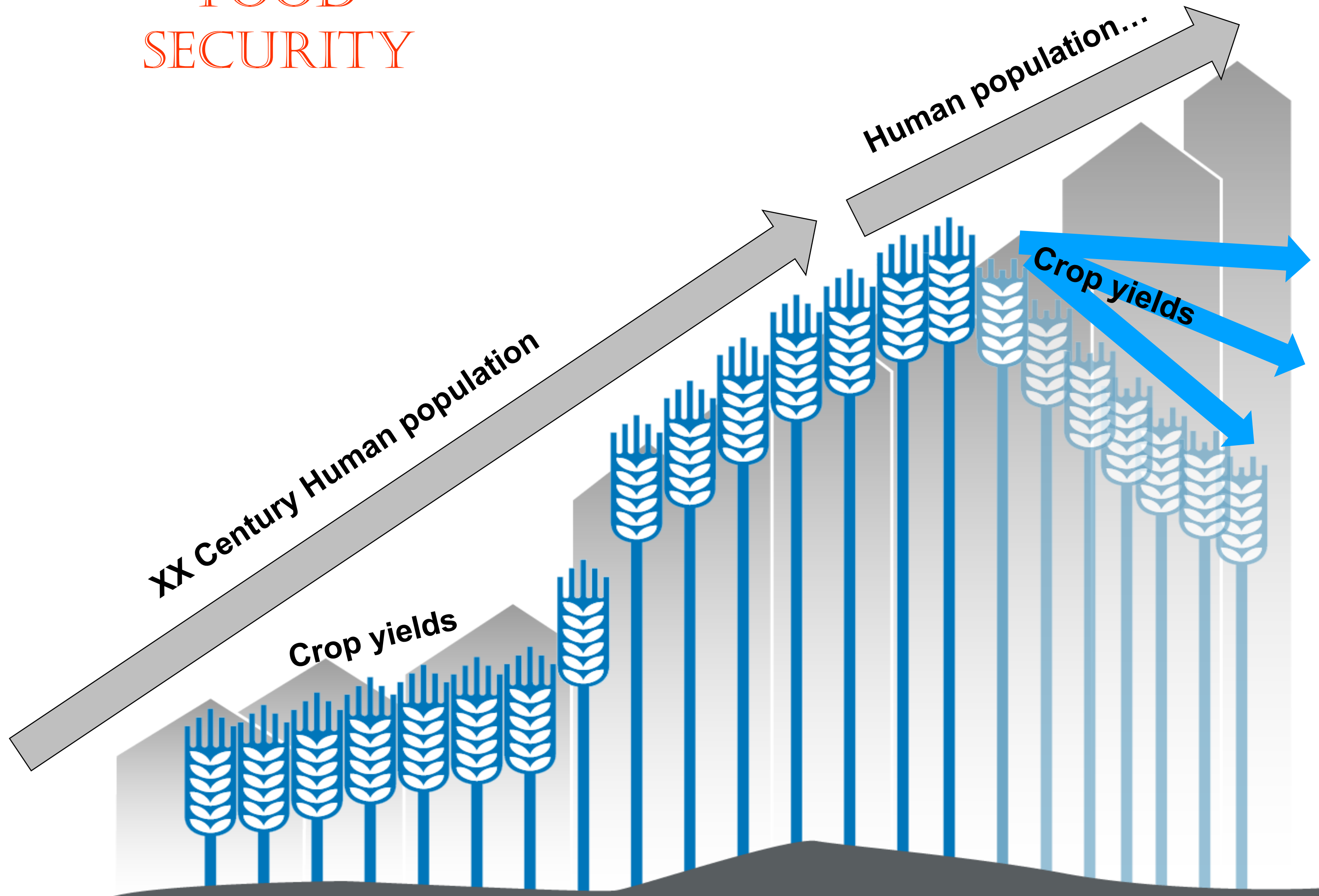


*PISA REEF™*  
*COLISEUM*





# FOOD SECURITY



**40 – 70 %  
Food Gap**

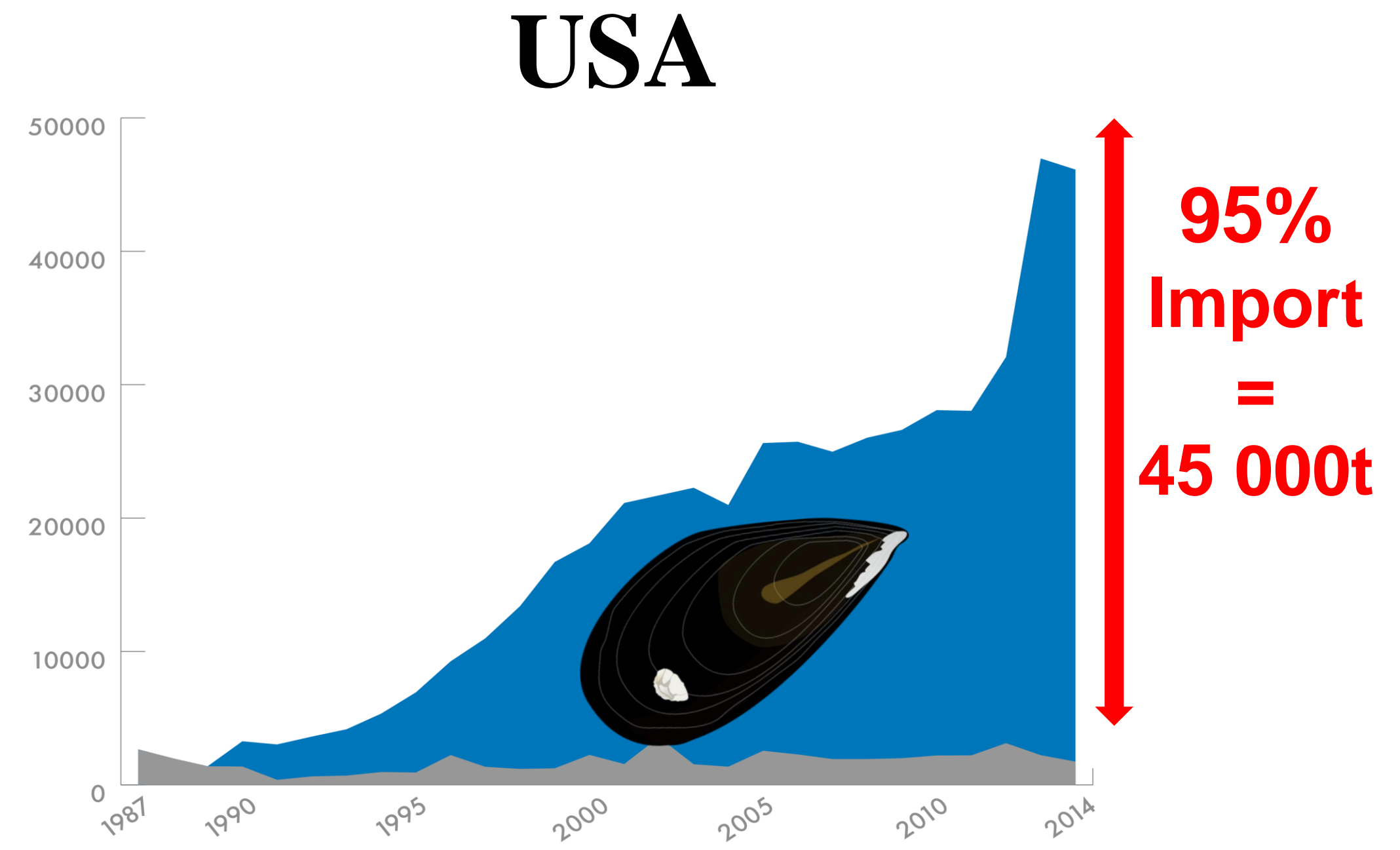
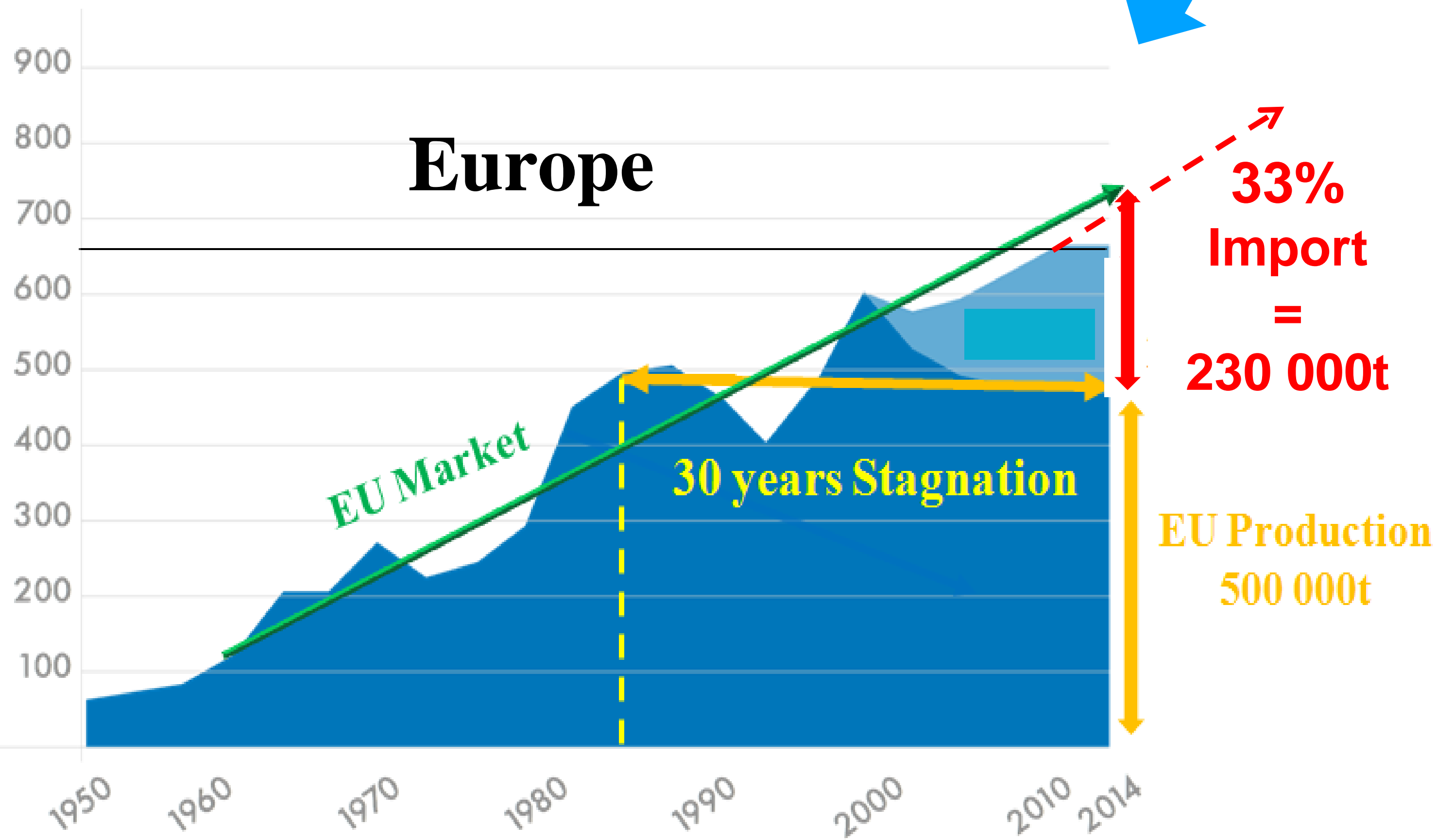


**(FAO, World Bank)**

**Technological Problem**



**Economic Problem**



(FAO, 2016)

# Application scale:

Conventional Technologies **vs** ORTO Pisa Reef

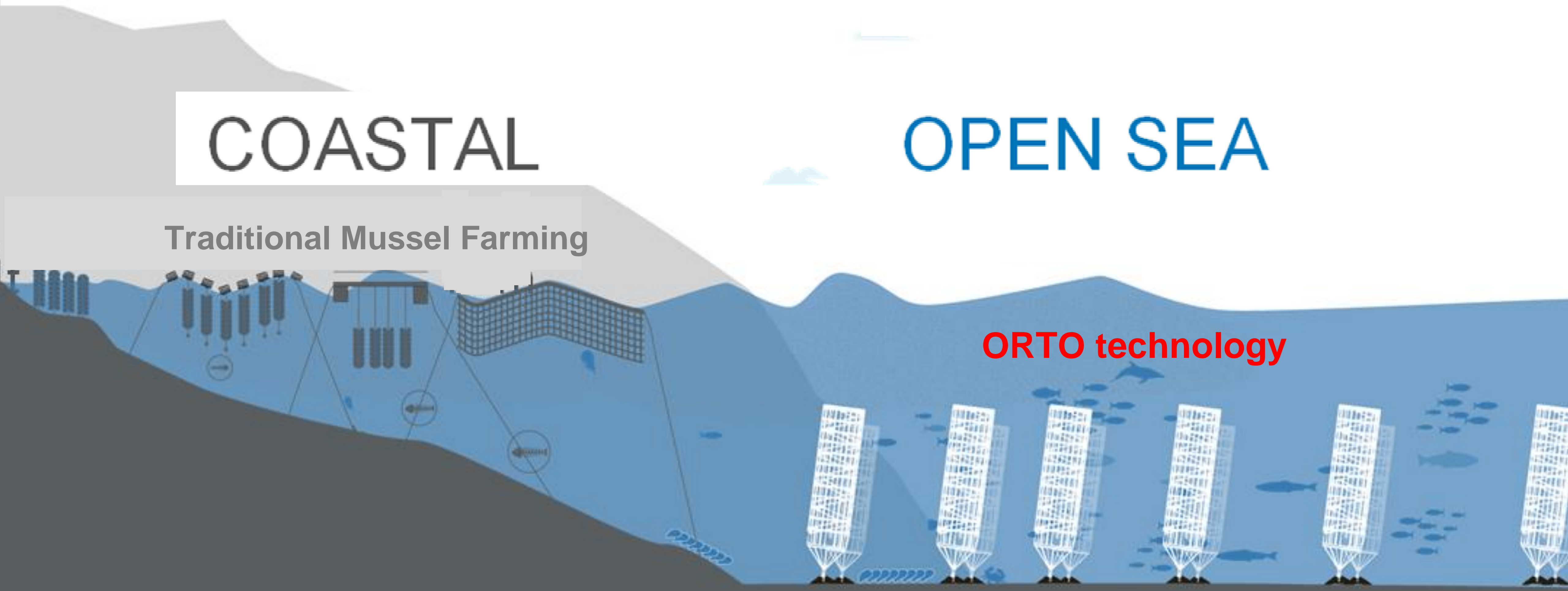
COASTAL

OPEN SEA

Traditional Mussel Farming

ORTO technology

x 100 times more production capacity







**EU Funded Project REEFS 37 units**

**71 units / 15 models  
tested in  
Bulgaria  
Romania  
Georgia  
Turkey**

**+ Self funded 34 units**





# *Pisa Reef*<sup>®</sup>

# Products:

**NO** Arable land



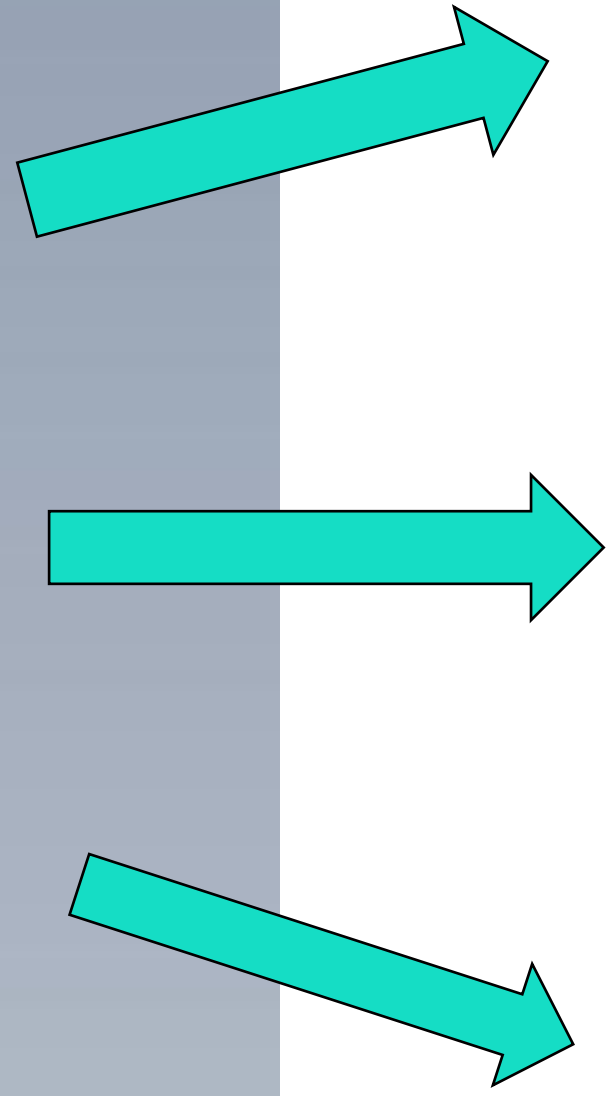
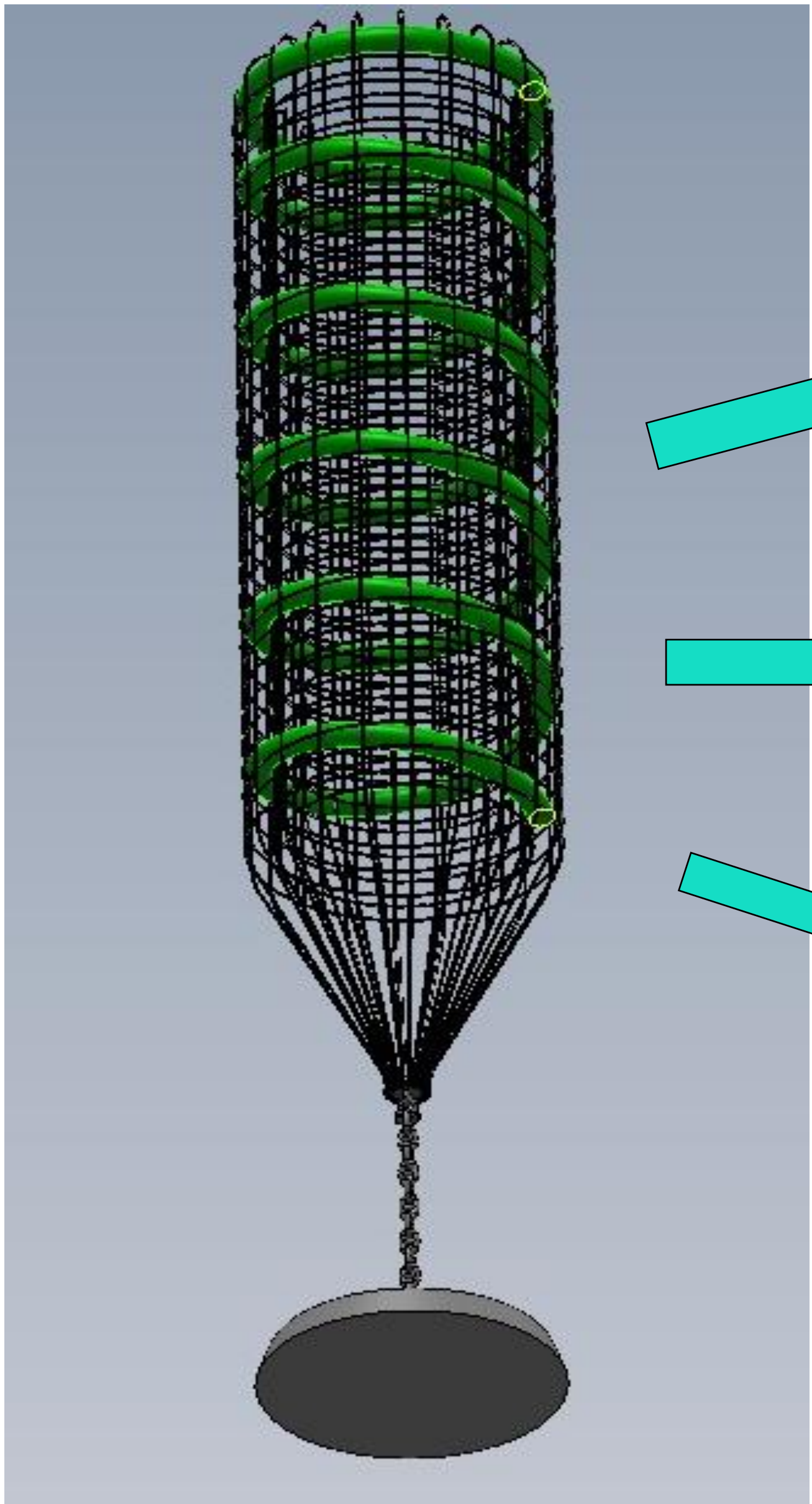
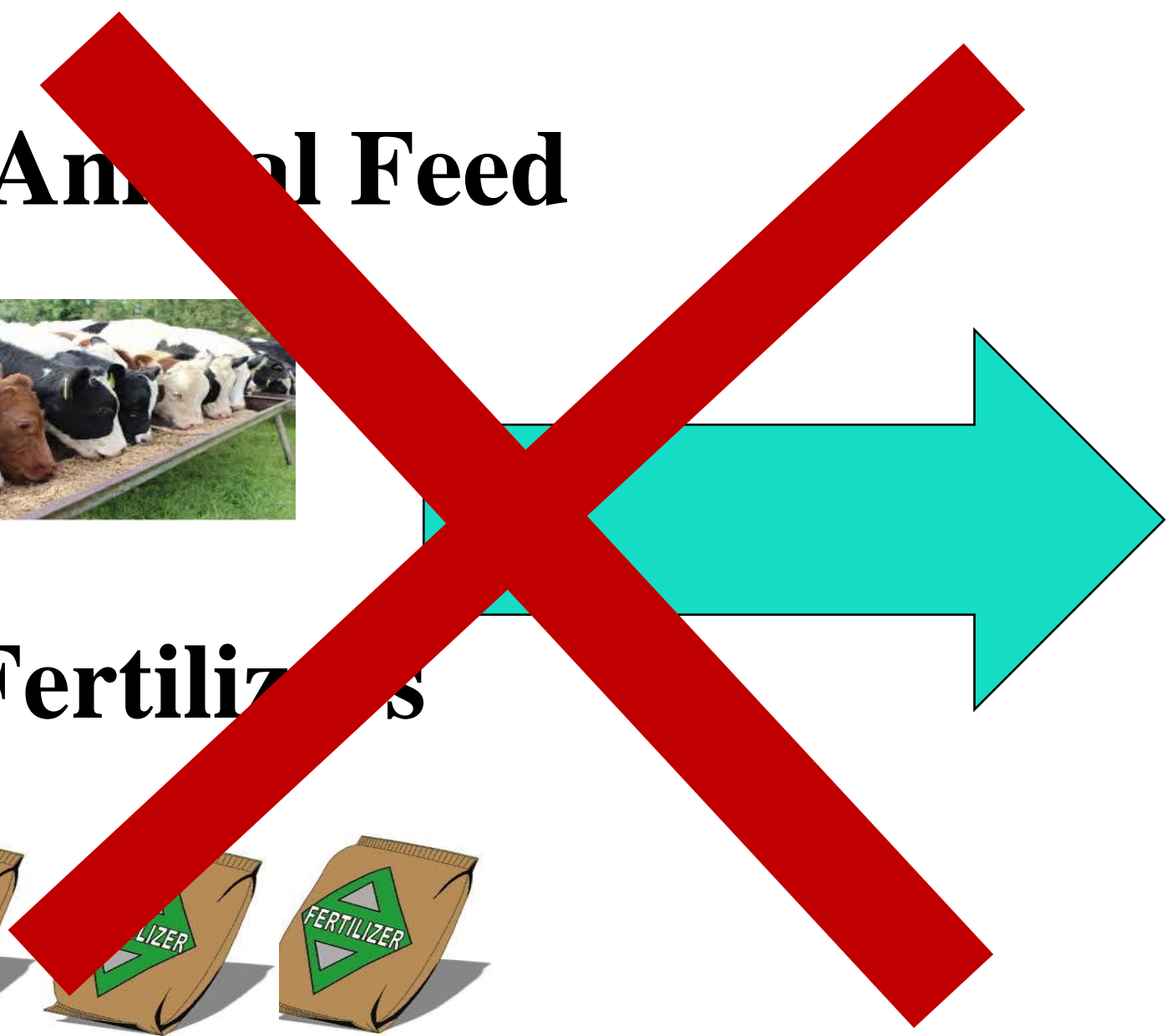
**NO** Animal Feed



**NO** Fertilizers

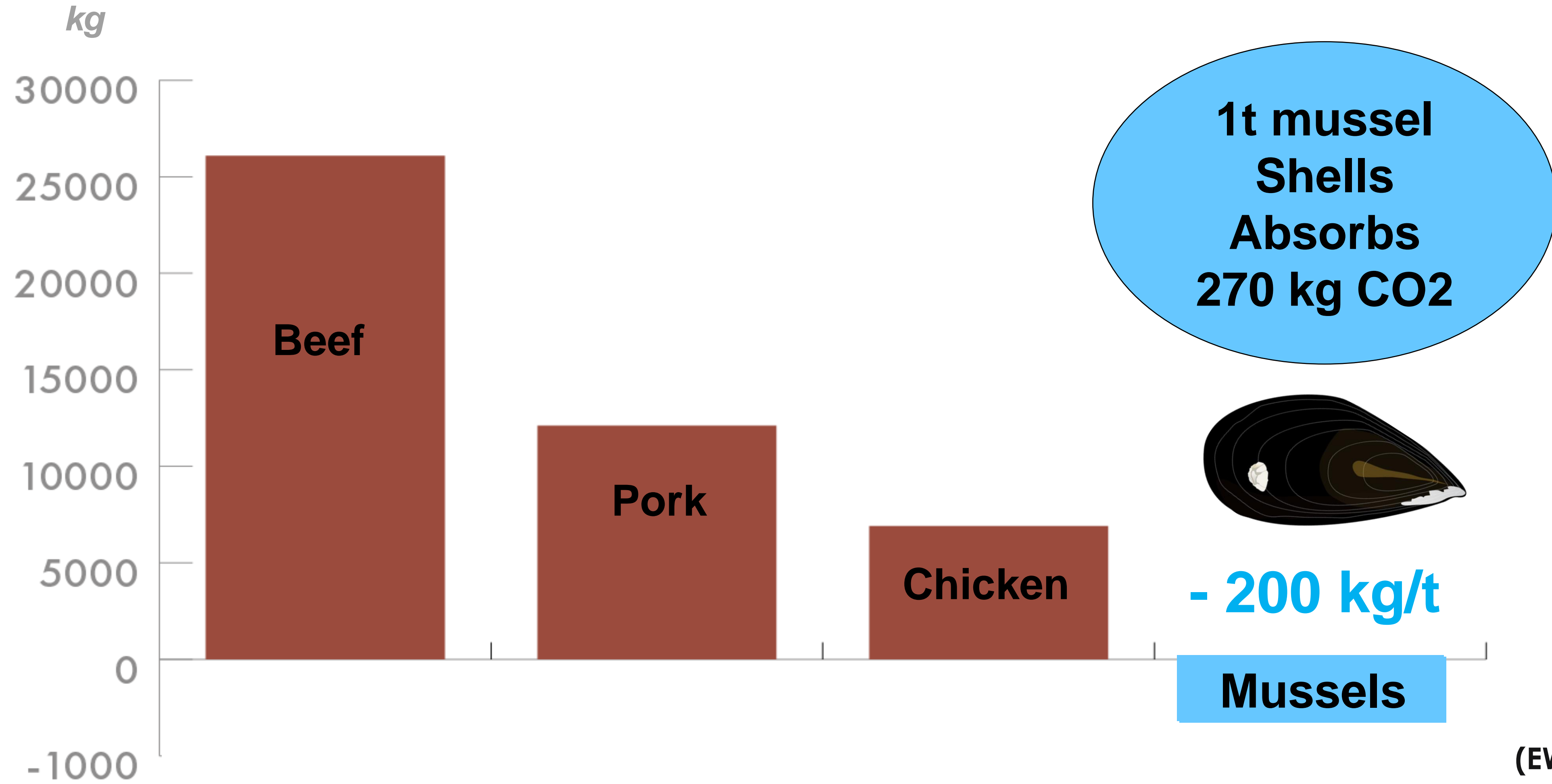


**NO** Fresh water





CO<sub>2</sub> / 1000KG  
MEAT



(EWG.ORG, 2011)





# A CHANCE to REBUILD the Mineral content of the SOILS

## Composting Mussel Shells



**PISA REEF / ORTO**

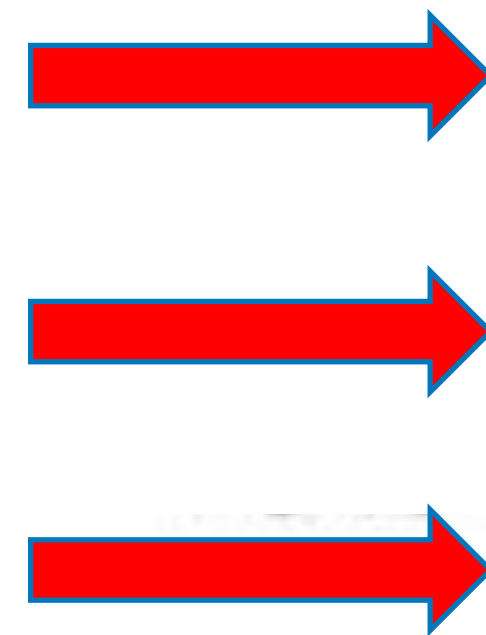




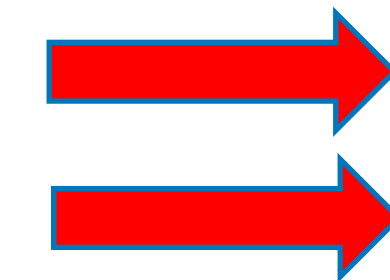


# DECREASING WAVE ENERGY & COASTLINE EROSION

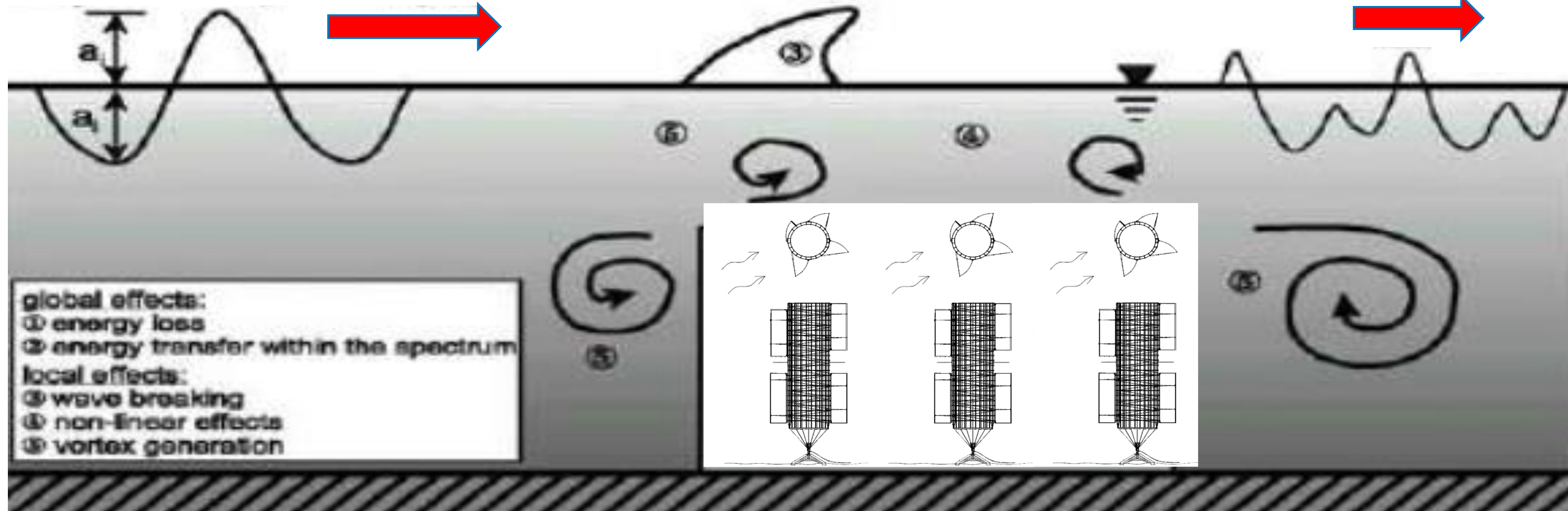
HIGH WAVES



WAVE ENERGY

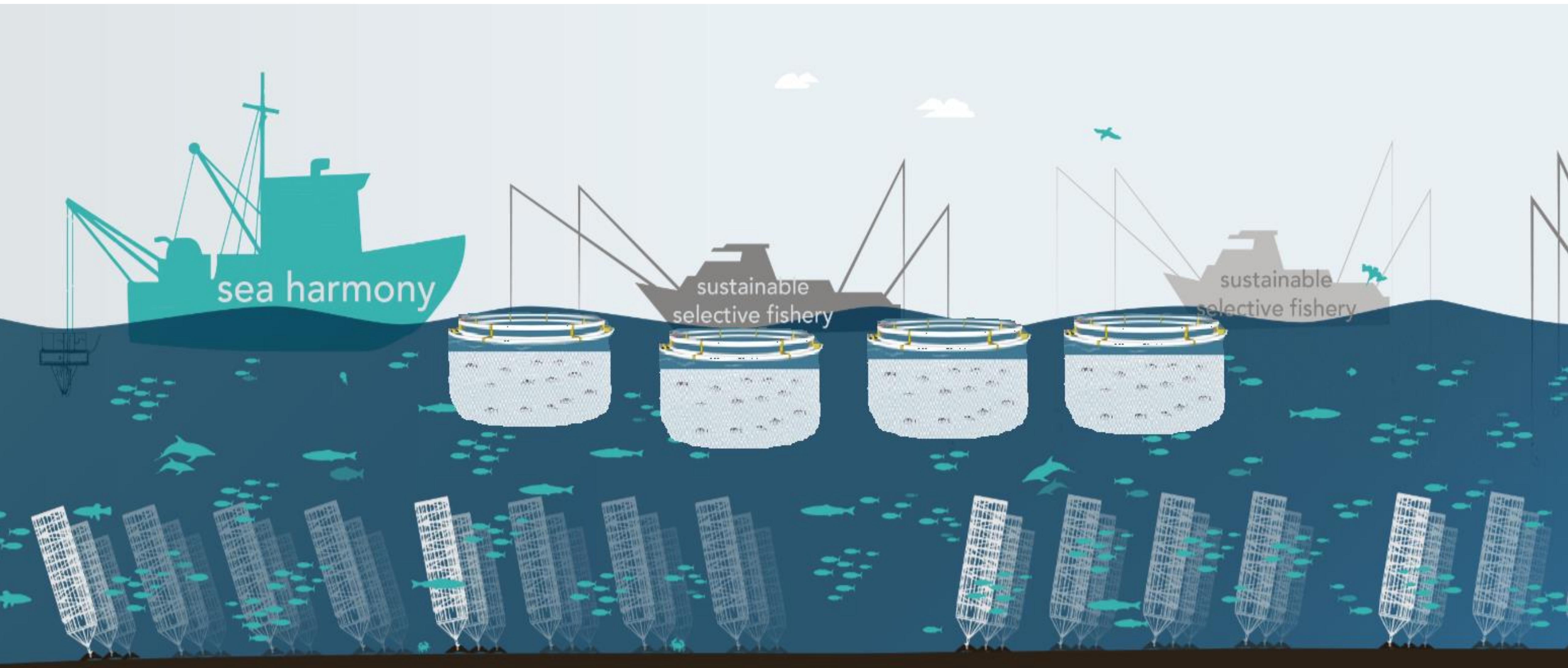


LOW WAVES





# Integrated Reef-Fish Aquaculture Farm



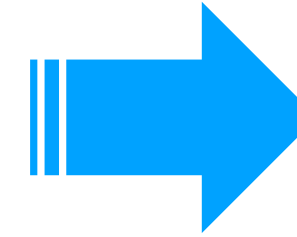


# The Application of Recycled Plastic



**Material cycle**

**Financial cycle**

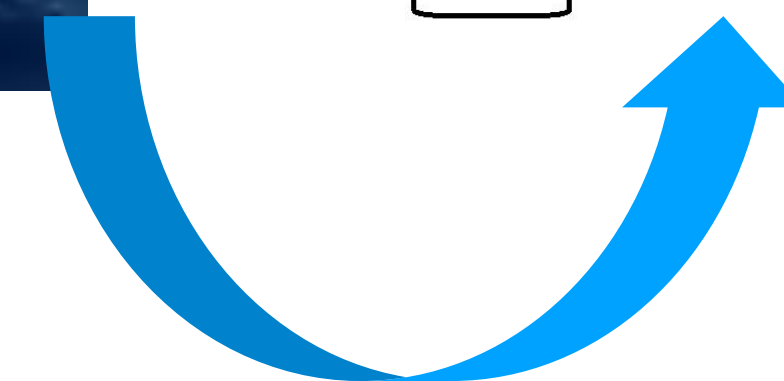
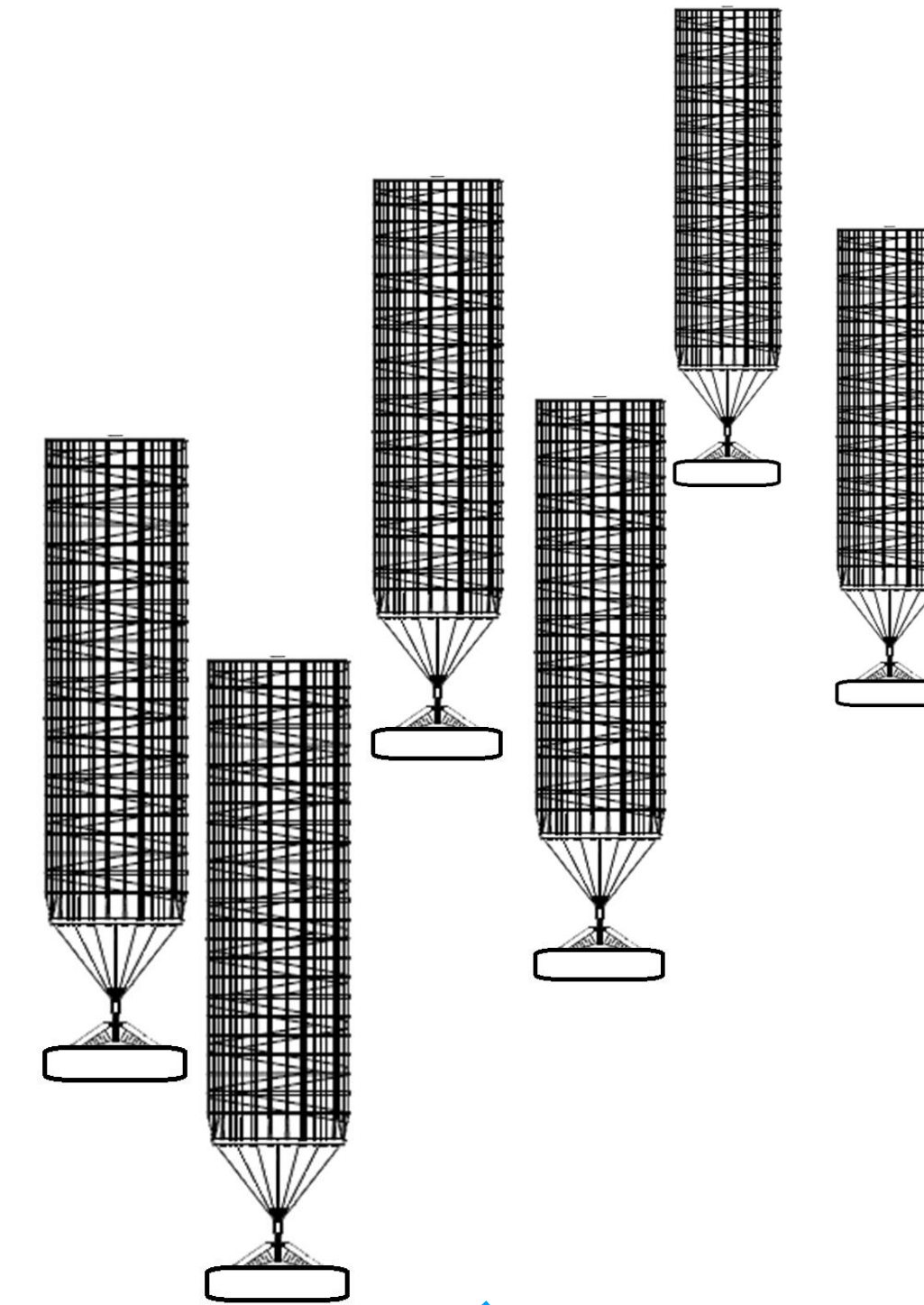


**Eco system service for Society**

**Rational and Sustainable Society**

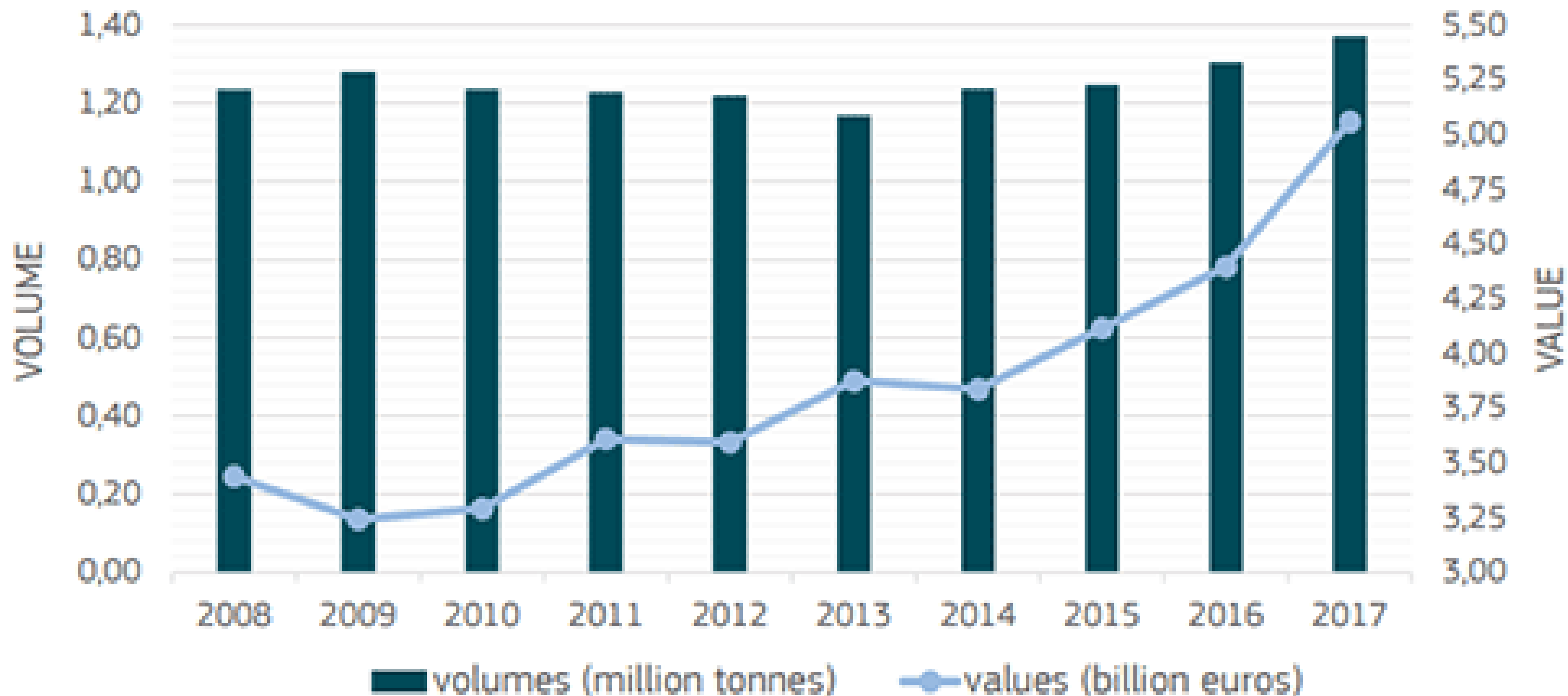


<https://www.theoceancleanup.com>





# AQUACULTURE PRODUCTION IN THE EU



Source: EUMOFA 2019



**Opportunity for Europe: From 30% Importer to 50% Exporter**

*Mussel production  
capacity:*

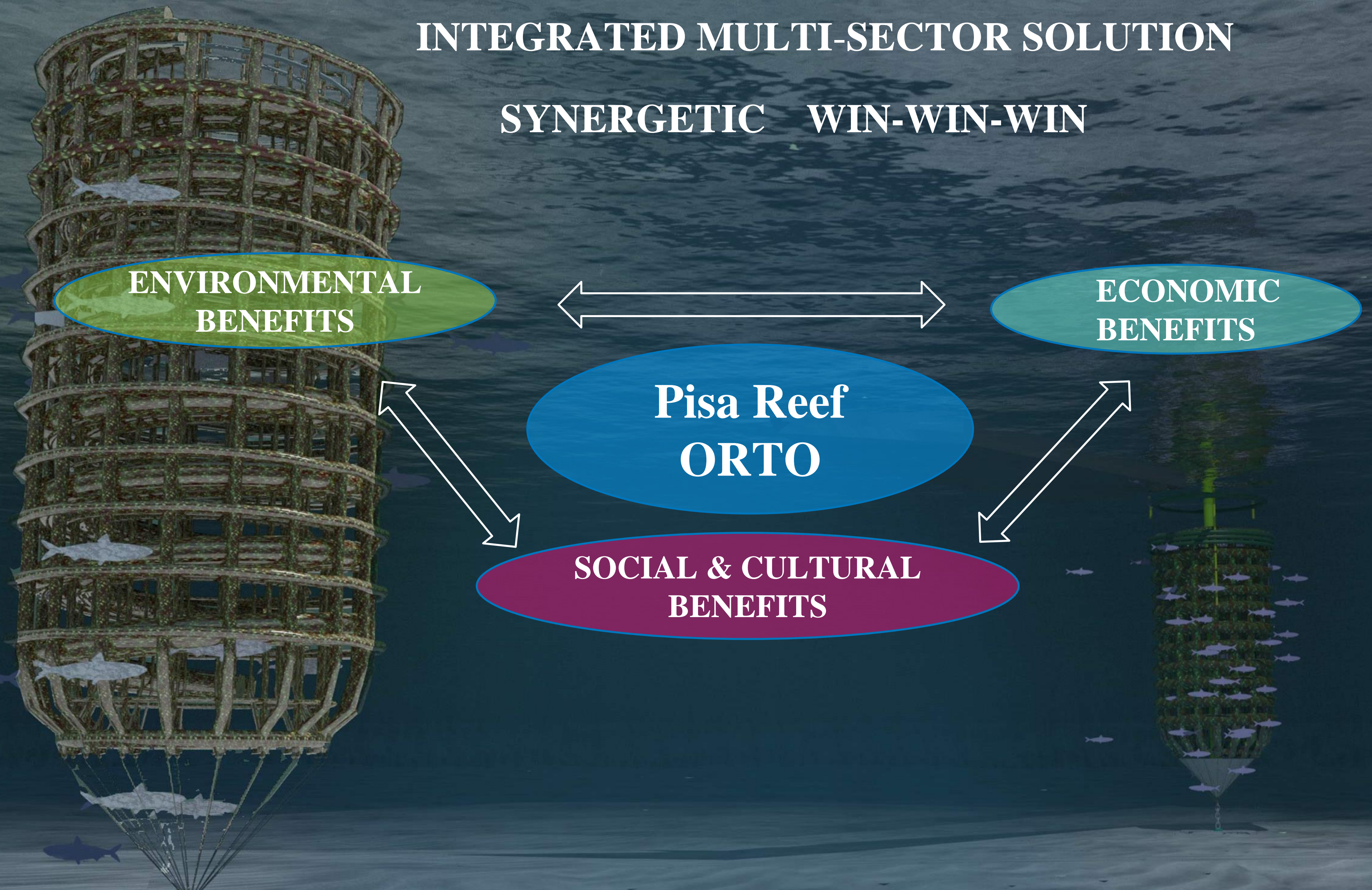
**2 000 000 t**

**Just to restore  
the core role and population  
of the mussels of the 60's**



# INTEGRATED MULTI-SECTOR SOLUTION

## SYNERGETIC WIN-WIN-WIN



**Ocean  
Reef-  
Tower  
Oases**







**Let's make  
the Reefolution !**

**[www.reefevolution.com](http://www.reefevolution.com)**



# Black Sea in Crises due to human activity

*In the 90's, 80% of the north-western shelf is considered a „Dead zone“*

„Dead zone“



Intensive agriculture



Overfishing



Invasive species



Change in the food chain

Economic Consequences

Overexploitation of 80% of the fish stock

-3/4 in the industrial fishing diversity

50% less fishing - 1385 K t in the 80s 677 K t now

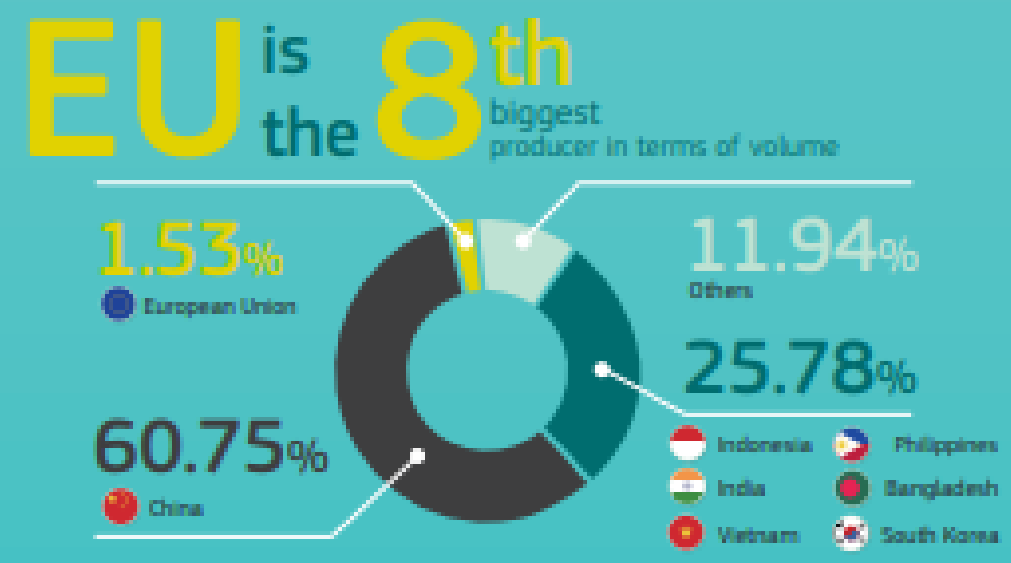
Less competitive tourism

*„Just in 18 years (1973-1990) the biological loses are estimated to be more than 60 000 000 t bottom organisms, including 5 000 000 t of fish.“*

*(Black Sea Commission, 2002)*



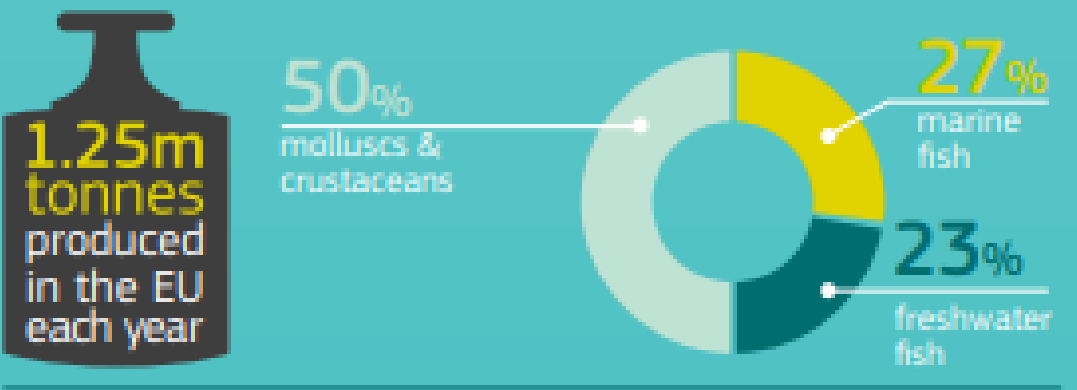
## AQUACULTURE PRODUCTION



**Did you know?**  
 Aquaculture will soon surpass wild fisheries as the main source of seafood. This reflects the transition which happened on land in the past with the evolution from hunting to farming.

In AD 79, Pliny the Elder described fish and oyster farming techniques in his book *Natural History*

## AQUACULTURE IN THE EU

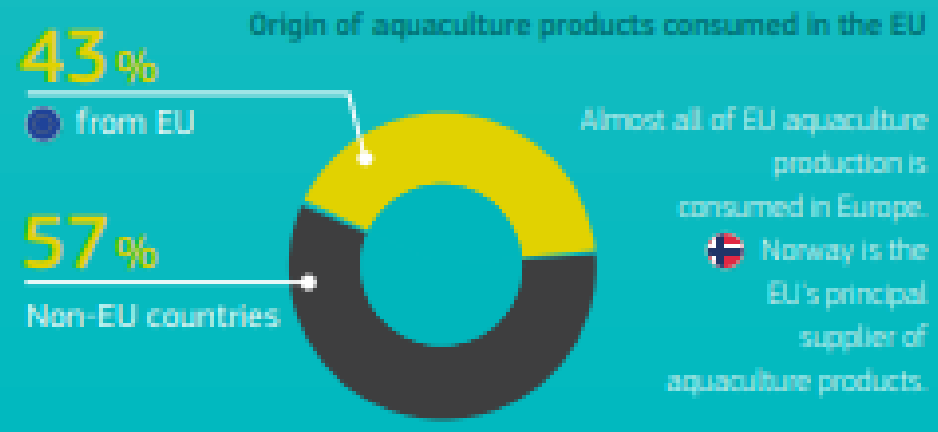


- Top 7 aquaculture species produced in the EU
- 1 Mussel
  - 2 Trout
  - 3 Salmon
  - 4 Oyster
  - 5 Carp
  - 6 Sea Bream
  - 7 Sea Bass

EU aquaculture provides a fresh, local supply of healthy seafood and follows strict rules to protect the consumer, the fish and the environment.

# FARMED IN THE EU

## AQUACULTURE CONSUMPTION



**The 2** most consumed aquaculture species in the EU are salmon and mussel

**Did you know?**  
 Nine out of ten mussels eaten in the EU are actually farmed

## AQUACULTURE BENEFITS

**85 000** directly employed in European aquaculture

**+14 000** enterprises in the LOCAL EU  
 90% of which are micro-enterprises (with under 10 employees)

Fish and shellfish provide oils, healthy proteins and minerals.

**omega 3**

At every step from egg to plate, farmed seafood is traceable

Sustainable aquaculture is needed because fisheries alone will not meet the growing global demand for seafood. Aquaculture can also help reduce pressure on wild fish stocks.