



Caribbean Regional Ocean Partnership



San Juan Sheraton Hotel and Casino, Convention Center
December 14, 2012

CROP Meeting Agenda

TIME SCHEDULE	ACTIVITY
9:40 a.m. – 9:45 a.m. Daniel Galán-Kercadó (DNER)	Welcome Remarks
9:45 a.m. – 10:00 a.m. Edwin Almodovar (NRCS)	Caribbean Regional Planning Body
10:00 a.m.– 10:45 a.m. Dr. Máximo Cerame-Vivas	Acknowledging Coastal and Marine Ecosystem Services: Past, Current and Future Uses
10:45 a.m. – 11:00 a.m.	Morning Coffee Break
11:00 a.m. – 11:45 a.m. Ernesto L. Díaz (DNER)	Coastal and Marine Spatial Planning in the Caribbean
11:45 a.m. – 12:45 p.m.	Lunch
12:45 – 1:00 p.m. Aaron Hutchins (TNC)	Forging Partnerships for Regional Conservation
1:00 p.m. – 2:45 p.m.	Round Table Discussion
2:45 p.m. – 3:00 p.m.	Afternoon Coffee Break
3:00 p.m. – 4:30 p.m.	Stakeholders Reports
4:30 p.m. Ernesto L. Díaz	Closing Remarks



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Keynote Speaker:
Máximo J. Cerame-Vivas, B.S., M.A., Ph.D.

- B.S. in Natural Sciences, University of Puerto Rico at Río Piedras.
- M.A. in Marine Invertebrates and Ph. D. in Marine Ecology from Duke University.
- Founder, Department of Marine Sciences, UPR Mayagüez.
- Member, National Academy of Sciences Committee on Ecological Research for the interoceanic Canal (CERIC) in Panamá.
- Member, Environmental Protection Agency Science Advisory Board, Washington, D.C.
- Dean of Basic Sciences, Graduate Studies & Research, Ponce School of Medicine.
- Executive Coordinator, Science & Technology Board, Economic Development Administration.
- Member (1997-2002) & President (2011) of Puerto Rico Council on Higher Education.
- As an artist, he has participated in 12 joint exhibits and 19 individual exhibits.
- He has published over one thousand columns in different newspapers.

Acknowledging Coastal and Marine Ecosystem Services: Past, Current and Future Uses

Máximo J. Cerame -Vivas, Ph.D.

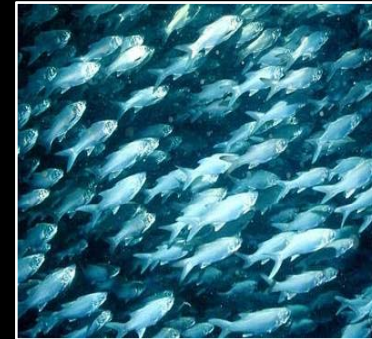
Marine Ecologist

Caribbean Regional Ocean Partnership Meeting

The Sea

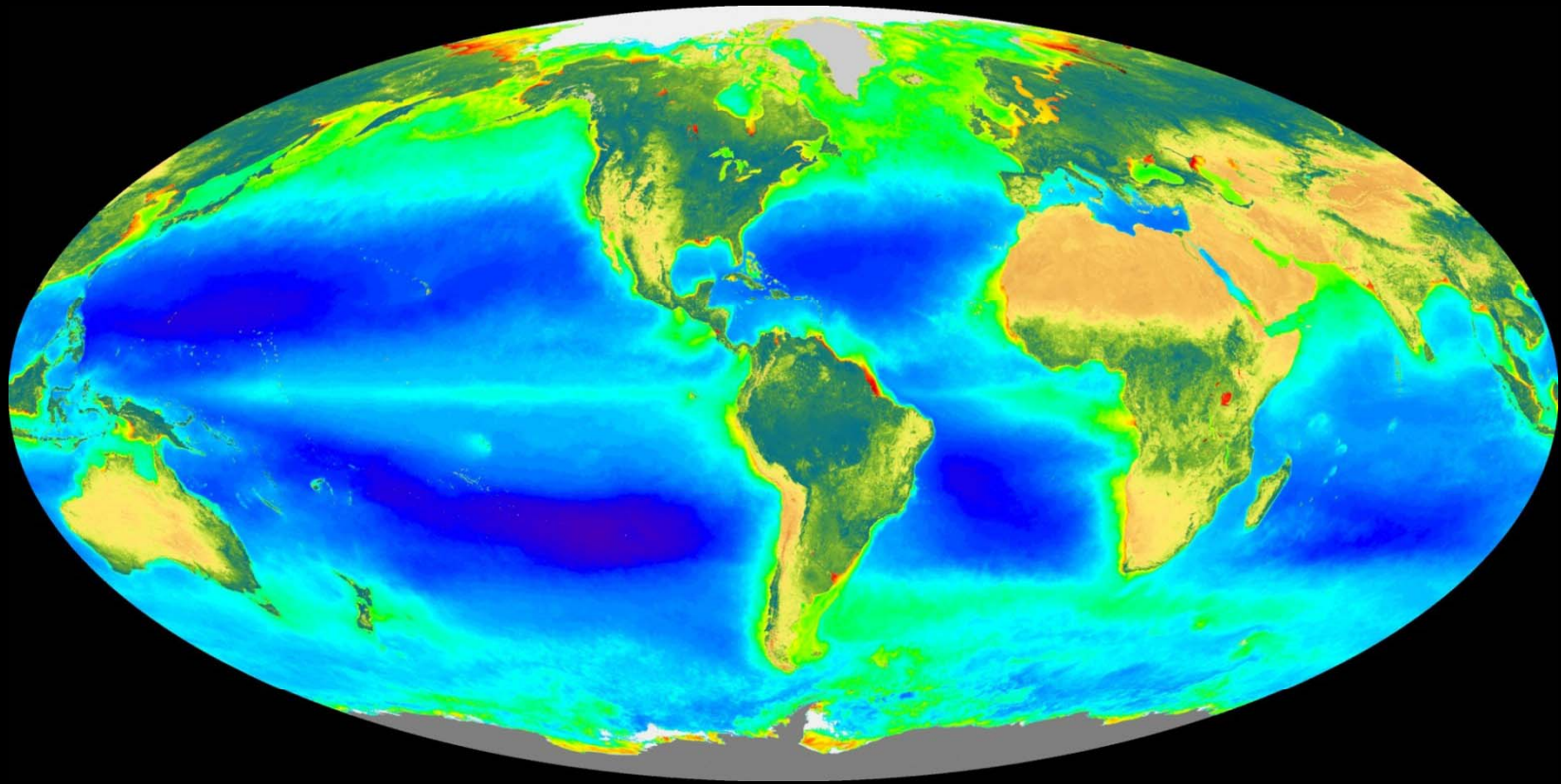
The Sea offers us many gifts

- Water
- Energy
- Fisheries resources
- Climate regulation
- Pathways for commerce
- Recreation
- Vaults for the safekeeping of biological diversity
- Paradises for honeymoon, vacation and tourism
- Battlefields



The Sea

The only flowing and moving and liquid and living sea in our Solar System



Law of the Sea

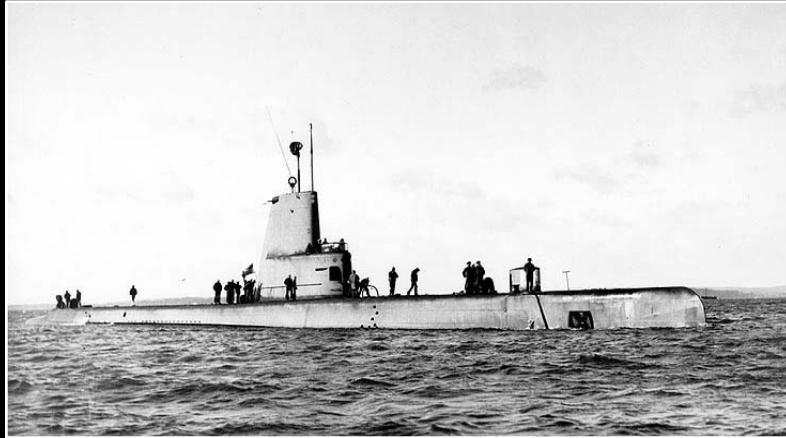
- Organized by Elisabeth Mann-Borgese
- Santo Domingo, Dominican Republic
- United Nations Convention on the Law of the Sea
 - Lasted from 1973 to 1982
- Attempted to regulate:
 - Mineral resources
 - Fish stocks
 - Pollution controls
 - Continental shelf ownerships
 - Coastal – water domains



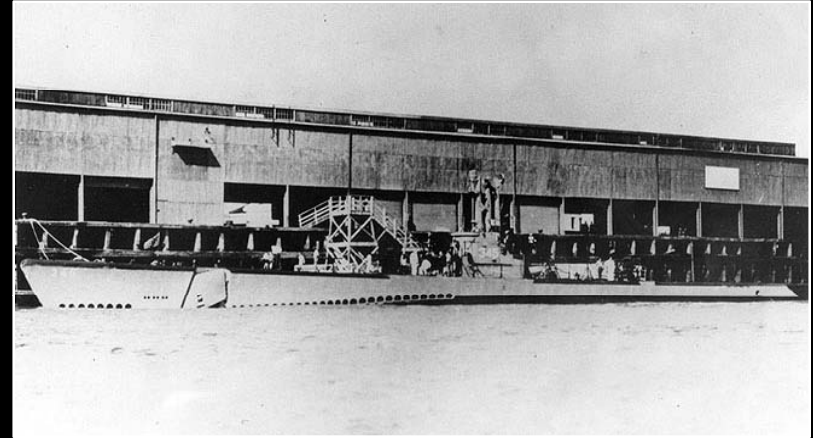
Elisabeth Mann-Borgese©AP

Submarines at Sea

1949 – *Cochino*, U.S. submarine SS-345



USS *Cochino* leaving Portsmouth, England



USS *Cochino* in port

Captain Rafael Celestino Benítez

- Native of Juncos, Puerto Rico
- Family from Vieques
- Lived to be 81
- Became a Professor

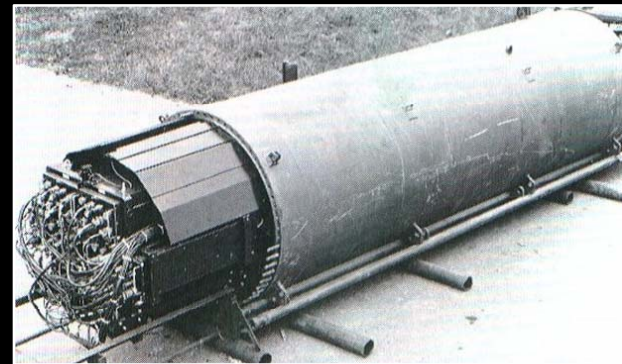


Submarines at Sea

- Submarine “spooks” wiretapped Russian communications submarine cables.
- Some of these operations involved helium saturation diving at depths of 700 feet.
- Navy divers would clamp wiretapping devices to submarine cables and monitor them regularly.



GE MK10 Rebreathers



Cable tapping pod

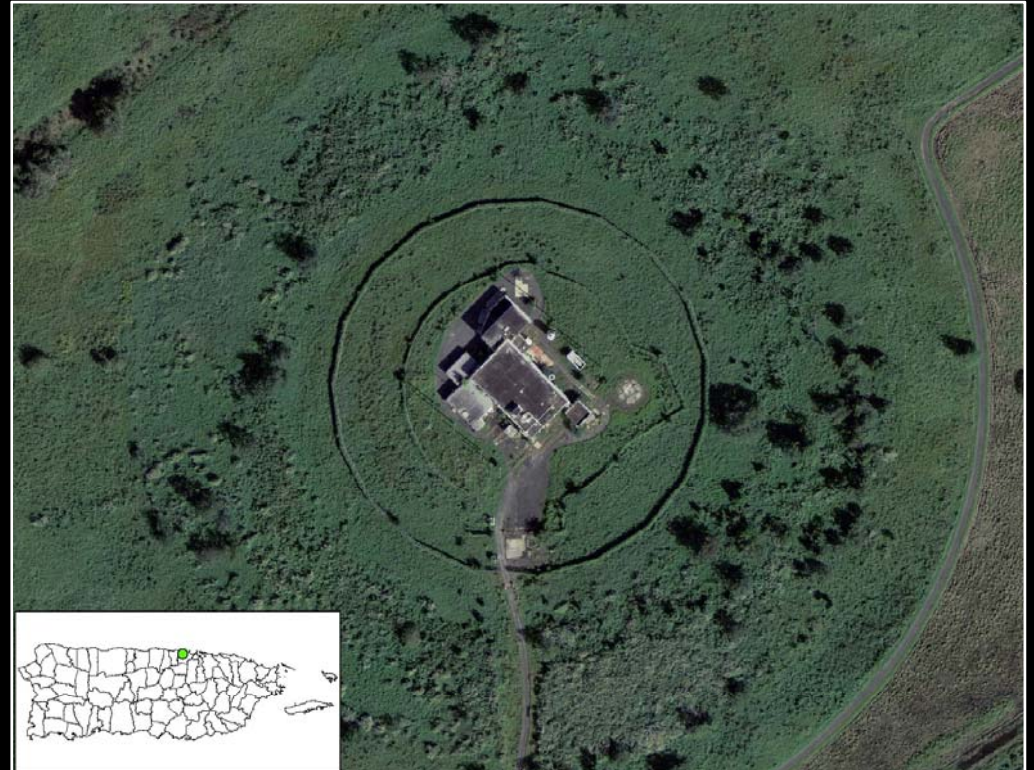
Submarines at Sea

- July 2012 – Russian nuclear sub *Gepard Akula II*, Gulf of México
- Warned the U.S. that the 2010 British Petroleum oil spill disaster was “beyond catastrophic”



Circular Wullenweber Antenna

- For tracking submarines
- Also called *elephant cages*
- About a dozen worldwide
- One of them in Puerto Rico



Coastal Population

About 40% of the world's population of seven billion lives within 100 kilometers of the coast.



About 2.8 billion souls

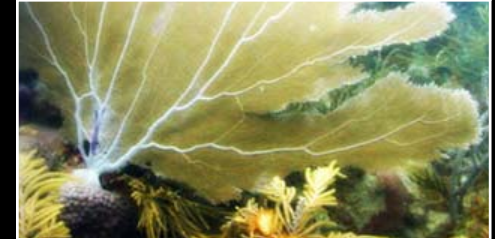
Clash of Jurisdictions

- Beautiful beaches are the resource that draws tourism.
- Interests determine that the last hurricane eroded many of its beaches.
- Access to its beaches must be limited as a protective measure.
- Downturn in tourism: Economy is threatened.
- Tourism company has a legal mandate to enhance tourism.
- Resource protection agency has a legal mandate to impede tourism.
- Clash.



Clash of Jurisdictions

- Coastline boasts spectacular coral reefs.
- Diving tours support a thriving eco-tourism.
- Interests want to develop that initiative further by providing more hotel rooms.
- Hotel construction projects gain political support.
- Dive tour entrepreneurs argue that reef visiting has a restricted carrying capacity.
- Public opposition to the construction projects.
- Dive tour entrepreneurs must fight the hotel construction entrepreneurs.
- Clash.



Clash of Jurisdictions

- An island wishes to increase its number of visitors.
- Only airport is too short to accommodate larger jumbo jets.
- At one end of the airstrip: A mountain.
- At the other: A beach and an adjoining fringing coral reef.
- Authorities decided upon extending the runway.
- Must level the mountain, where iconic four-star hotels reside, or fill at the beach, smothering the fringing coral reef.
- Clash.



Clash of Jurisdictions

- Natural fisheries resources can be exploited at:
 - Optimum Sustainable Yield Rate (OSYR)
 - Maximum Obtainable Yield Rate (MOYR)
- One exploitation approach clashes with the other.
- Fisherman clashing against fisherman.
- Fishery bans become mandatory.
- Regulations clash with fishermen.
- Clash.



Universal Natural Law of Modern Public Administration

Every proposed, necessary, and/or remedial initiative presupposes an inevitable opposing or contrary stance.

Oil Spills in Puerto Rico

Vessel	Spill	Locality	Year
Ocean Eagle	3.7 million g crude	San Juan Harbor (El Morro)	1968
Zoe Colocotronis	1.5 million g crude	La Parguera, Lajas	1973
Peck Slip	600,000 g Bunker	Las Cabezas de San Juan, Fajardo	1978
Julie N.	1,400 g Bunker	Puerto de Las Mareas, Guayama	1990
Morris J. Berman	1,547,523 g Bunker	Punta Escambrón, SJ	1994

- Five major oil spills since 1968
- Total of 7.3 million gallons of spilt material



Morris J. Berman, Punta Escambrón

Environmental Impact Statement

- Review process prior to the enactment of any project that would allow us to ponder upon how the environment may be affected by man's activities.
- Even man's breathing has an environmental impact.

Most Advertised Environmental Impact:
Man's production of CO₂ through
fossil-fuel burning and subsequent
atmospheric warming.



Capeco, October 23, 2009

Global Warming Proponents

- Increase in CO₂ would heat the atmosphere 3°C in the next century: 0.03°C per year.
- The numbers have since been revised.
- Later decided that the atmosphere – *not the Planet* – would warm up only 0.74°C during the next century: 0.0074°C per year.
- Difficult to establish if normal variation can still be well over 10°C per day.

Temperature of the Earth



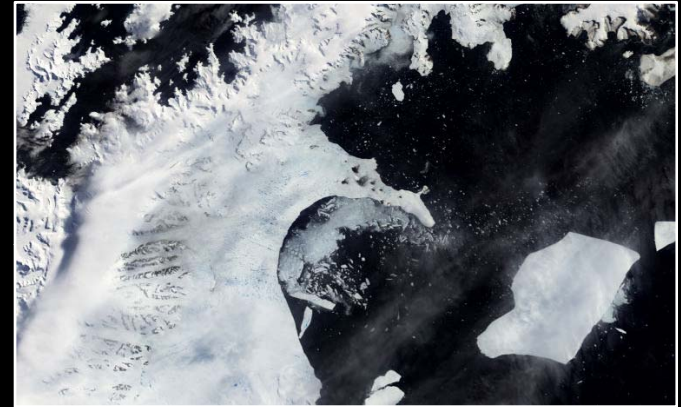
Pinatubo, Filipinas (June 12, 1991)
4 km³ of ashes and 10,000,000 T
of sulfur to the atmosphere.

Temperature at the Center of the Earth:
7,000 °C Equivalent to that of the
outer layers of the Sun.

Pessimistic Proponents

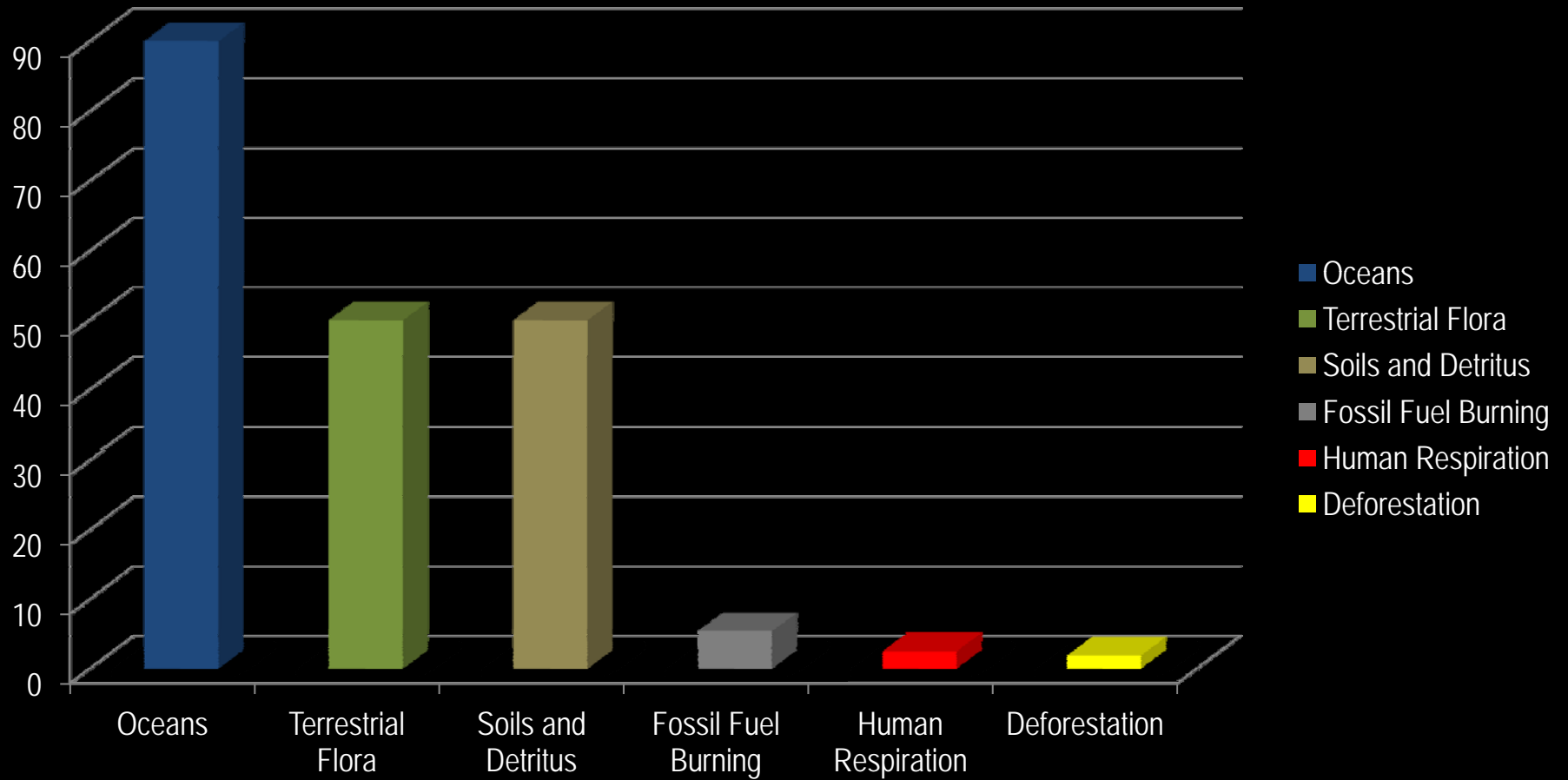
Catastrophes would ensue worldwide:

- Polar ice sheets would melt
- Sea levels would rise
- Cities would flood
- Plagues would spread
- Flood and drought and storms would afflict us worldwide.

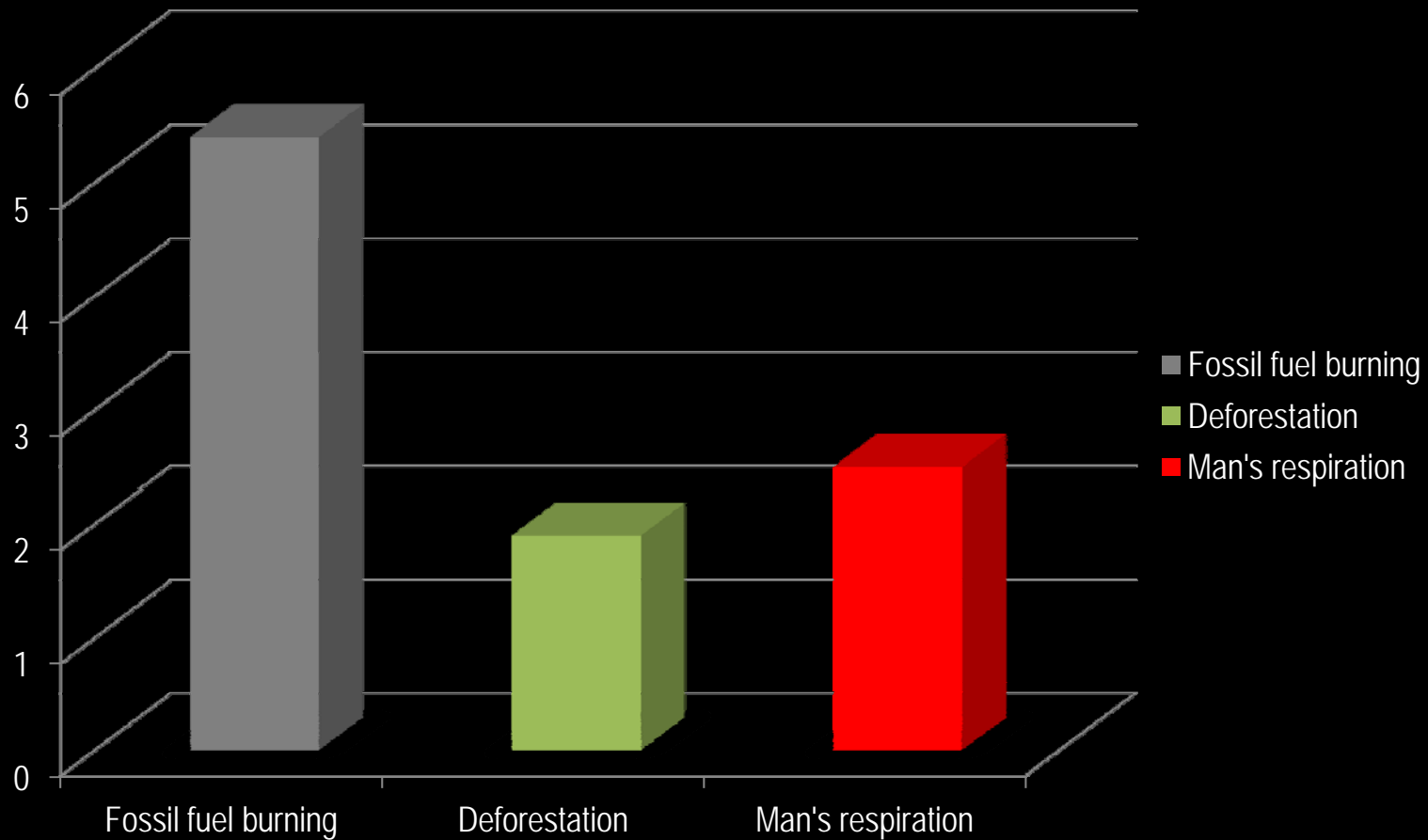


Mankind's Greatest Weakness:
If I can scare you, I can control you

All Sources of CO₂



Fossil Fuel Burning, Deforestation and Man's Respiration



Environmental Impact Allowance (EIA)

Governments: review coastal and marine natural resources and decide upon their use.

Jurisdictions: decide where they want to go and how to get there on a long-term basis.

Assess how much environmental impact we are willing to allow and where.

Assume full responsibility for our assessment and don't ever look back.

Quasi-constitutional standing to our resource assessment.

Make EIA reviewable and renewable only at fifty-year intervals.

Environmental Impact Allowance

Becomes senior environmental impact statement
and major planning document.

Determines *a priori* what can be done, where,
and to what extent.

Becomes master plan.

Invites projects where they have already been
blessed and permitted *a priori* by the plan.

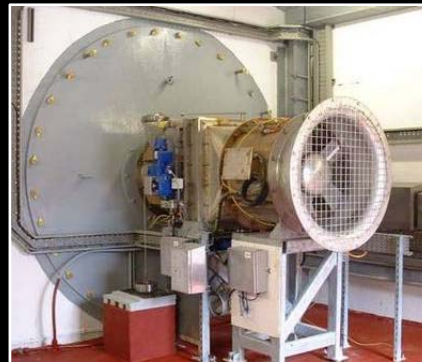
Renewable Energy Projects

Land Installed Marine Powered Energy Transformer (Limpet)

Oscillating water column technology



- Reference plant and test bed
- 11+ years grid connected operation
- World's first commercial scale grid connected wave energy plant



Renewable Energy Projects

Voith Hydro Wavegen – Options for deployment



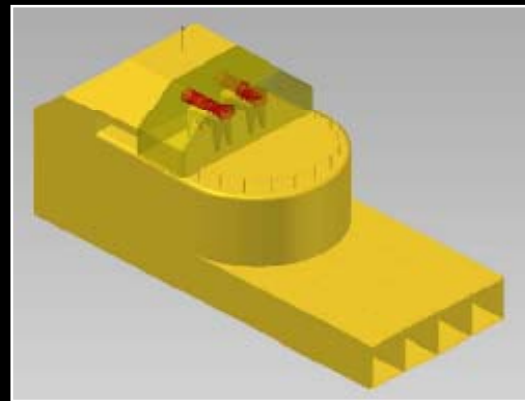
Shoreline Reliability, Test Bed



Breakwaters New and Retrofit



Nearshore – Stand Alone Commercial Energy Projects



Offshore Multi-100 MW Arrays

Renewable Energy Projects

Pelamis



Renewable Energy Projects

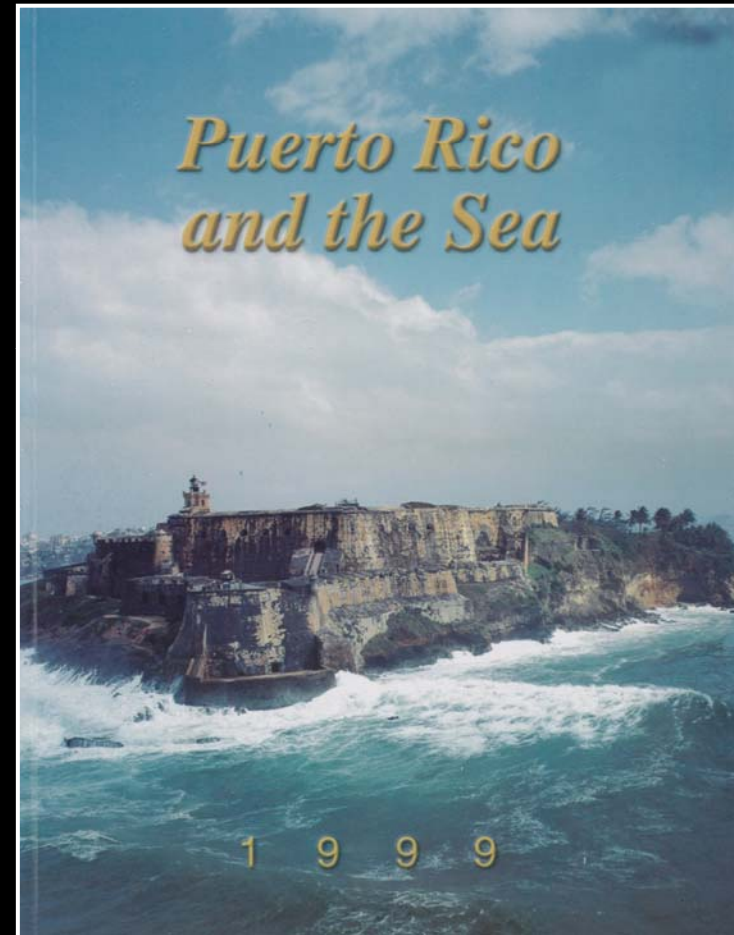
Don't ever allow the argument of "our technology isn't there yet"

"I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth."

John F. Kennedy - May 25, 1961

Marine Planning and Review Initiatives

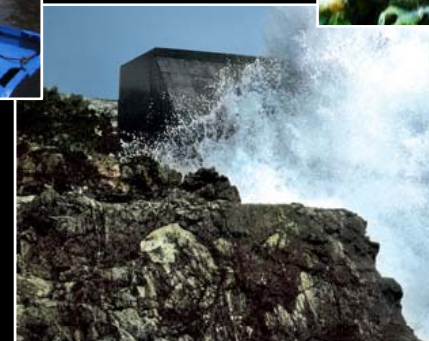
- 1972 and 1999
- Government sponsored
- Never became binding public policy
- Political will hasn't been there
- Strongly urge we re-visit "Puerto Rico and the Sea"



Competing Fuel Interest



The Caribbean is the logical and ideal showcase for intelligent ocean-focused natural resource management.
Let us teach mankind how it's done.





Thank You