The innovation imperative

David A. Golden
Senior Vice President, Chief Legal & Sustainability Officer and Corporate Secretary at Eastman

x7

A job for innovation

Decisions Based on…

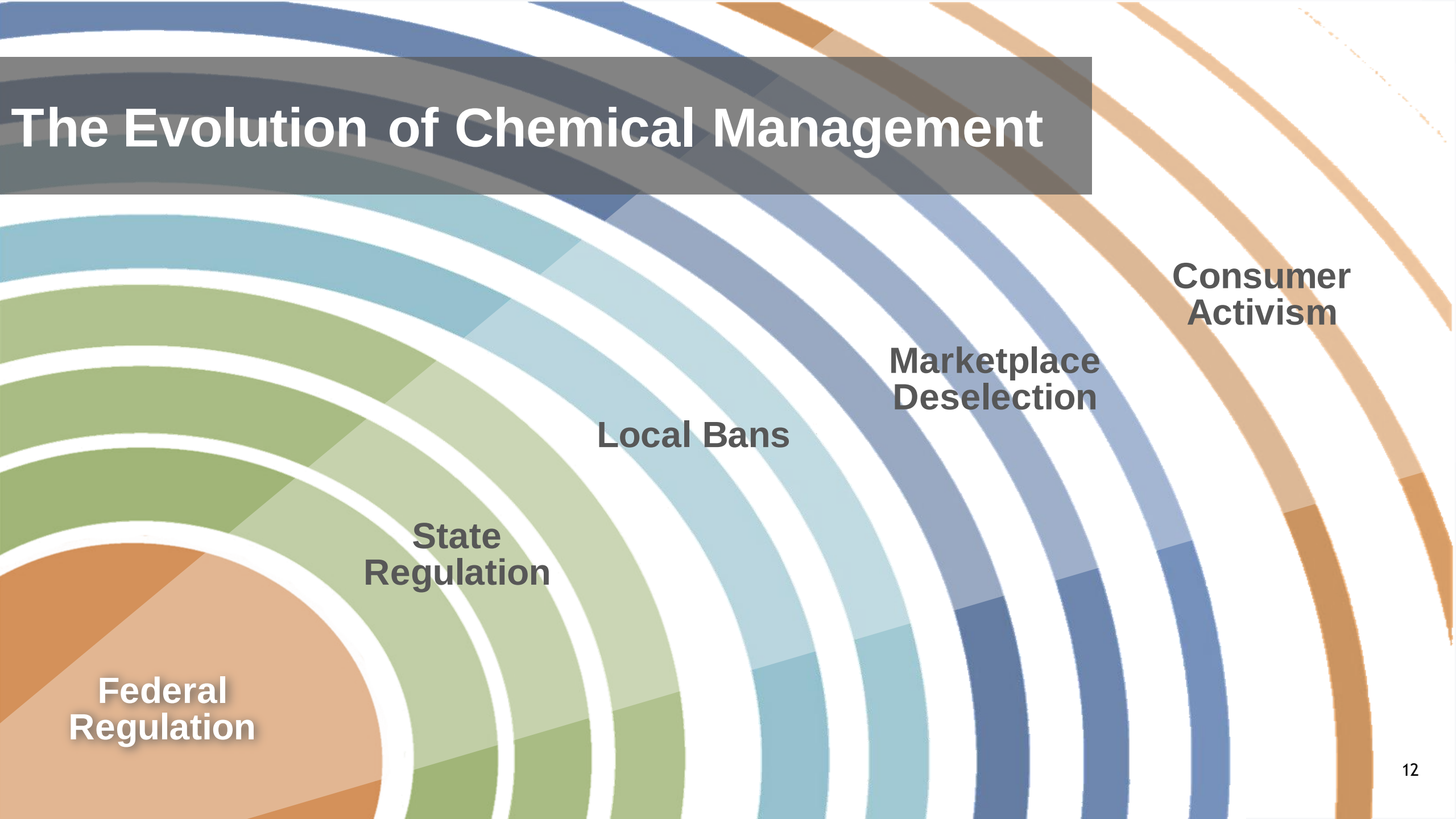
Science?

Perception?

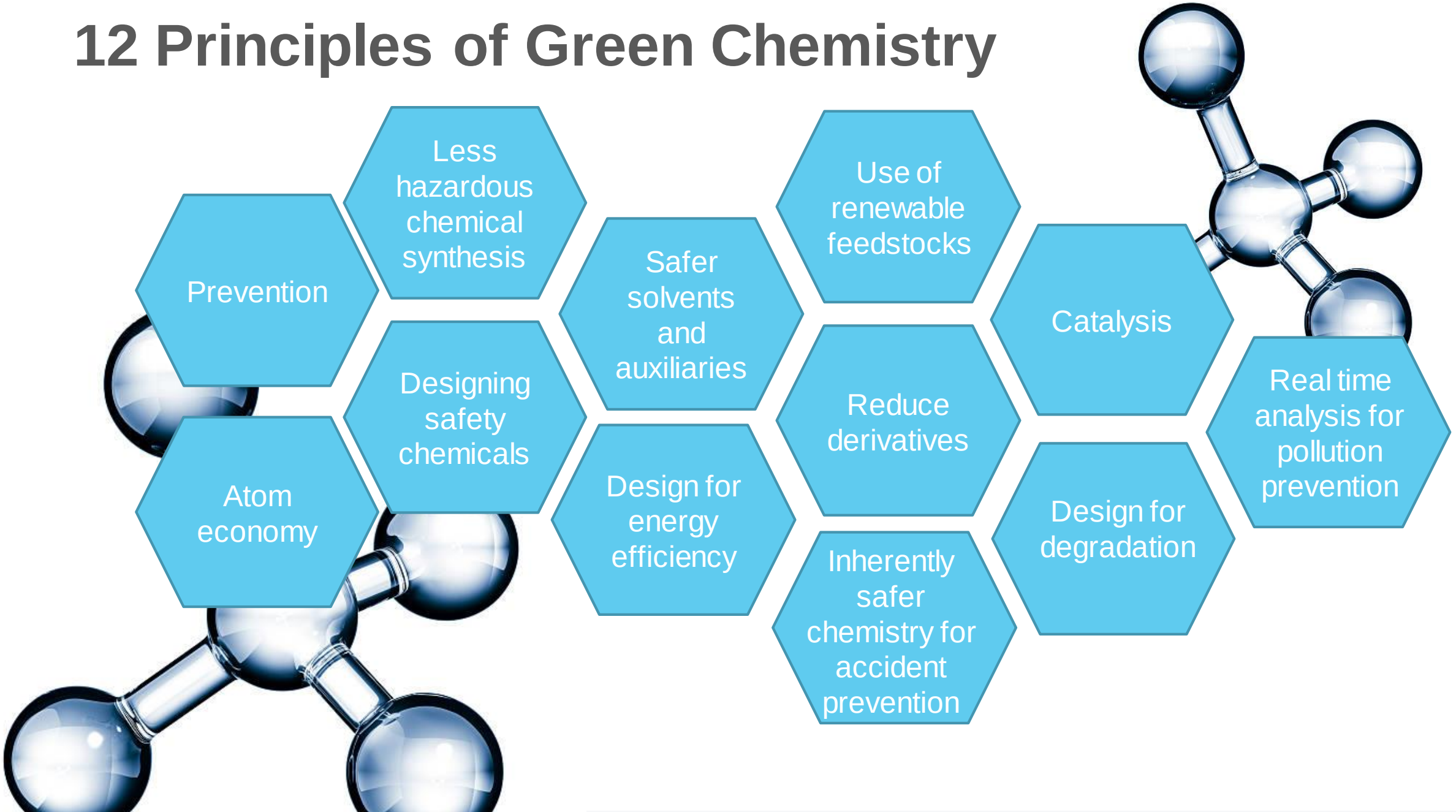
“BIG COMPANY DOES BAD”

“We can only trust _____”

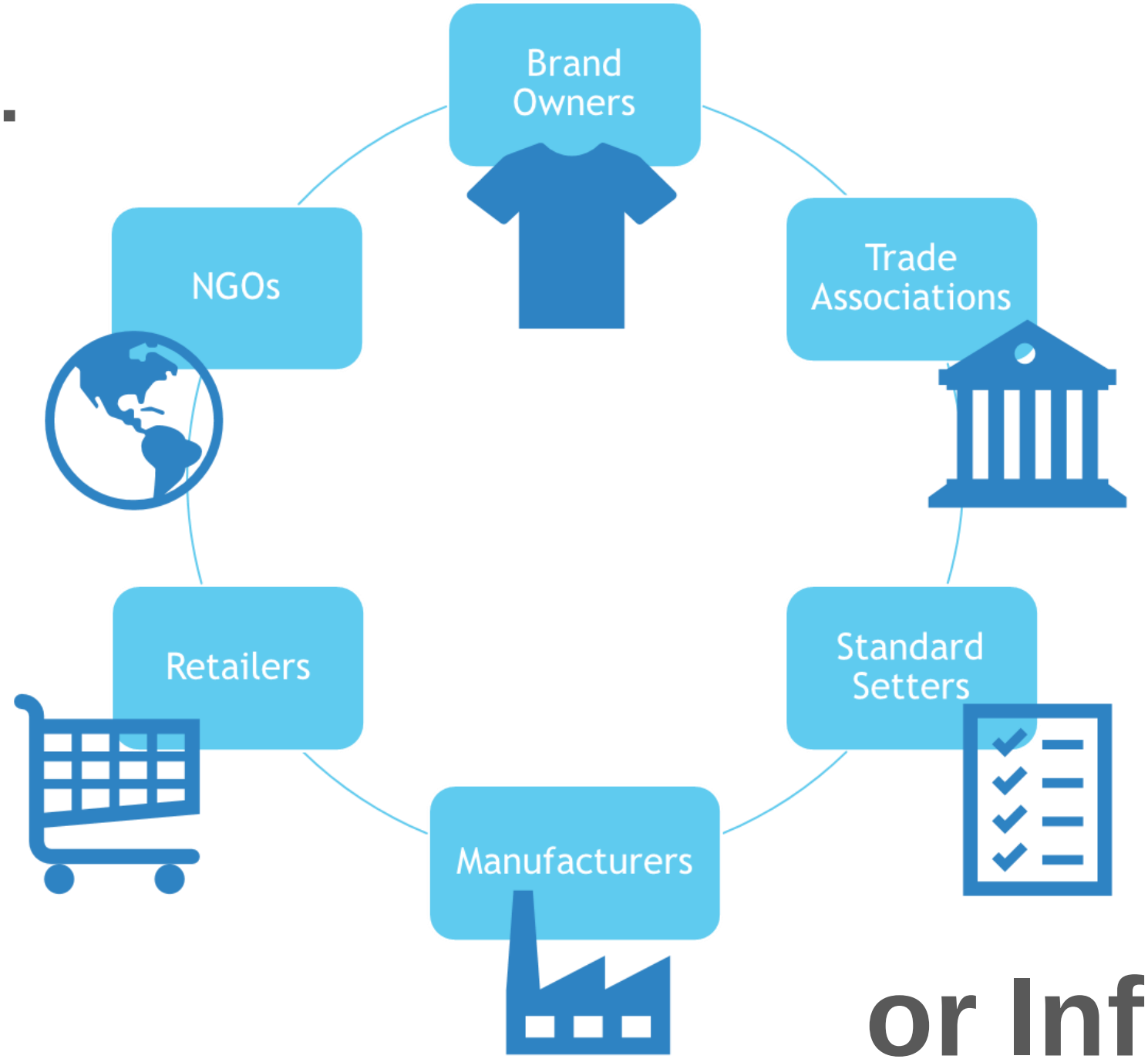
The Evolution of Chemical Management



12 Principles of Green Chemistry



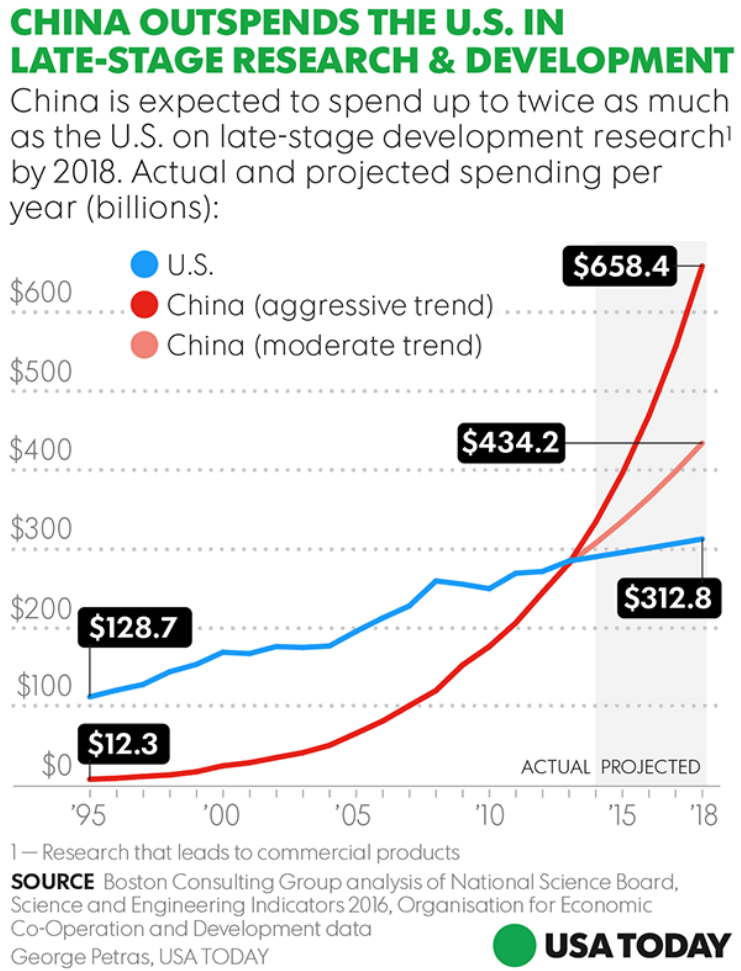
React…



or Influence?

Accelerating product and process innovation

- China has quietly surpassed the U.S. in spending on the later stage of R&D that turns discoveries into commercial products.
- In other words, the U.S. is doing the hard work of inventing new technologies, and China, among other countries, is reaping the benefits by taking those ideas and turning them into commercial products.
- One source of friction in the US occurs between academia and private industry.
- Majority of basic and applied research is funded by the federal government and conducted at universities, while industry focuses overwhelmingly on development research.



Source: Boston Consulting Group. An Innovation-Led Boost for US Manufacturing. April 17, 2017.

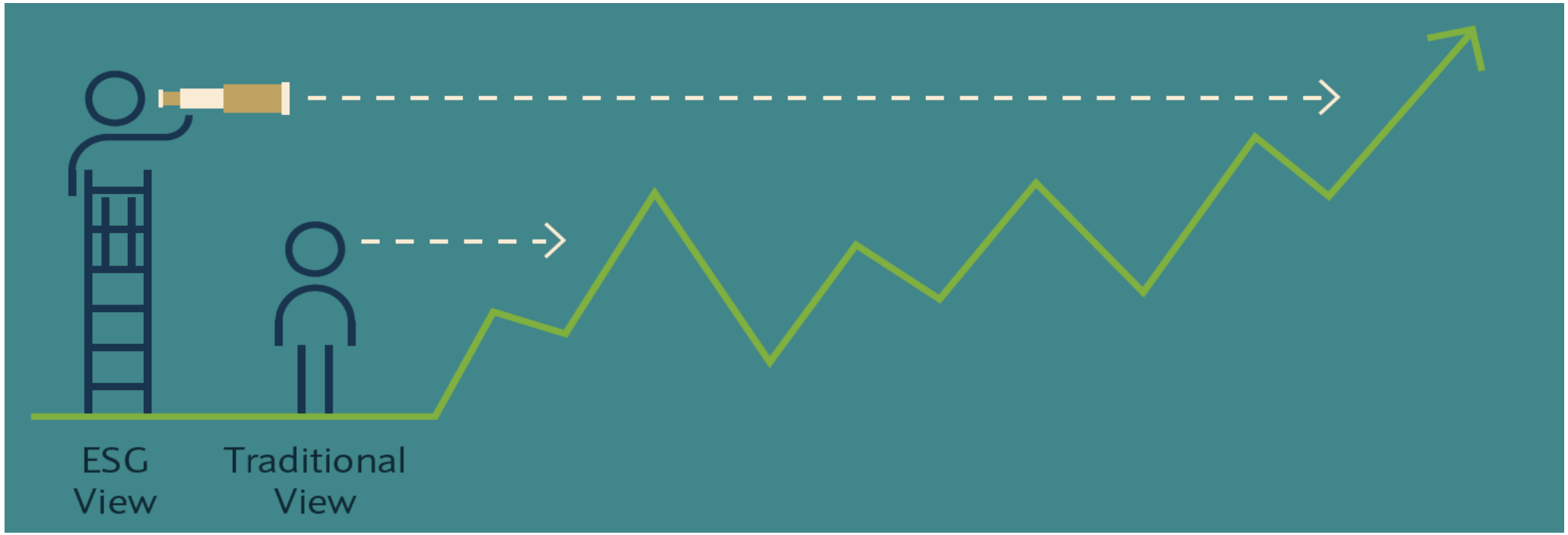
What lenses should guide your innovation?

Why is ESG investment growing?

New risk factors on the investor radar

ESG (environmental, social and governance) is a term used in capital markets and used by investors to evaluate corporate behaviour and to determine the **future financial performance** of companies.

Financial Times definition

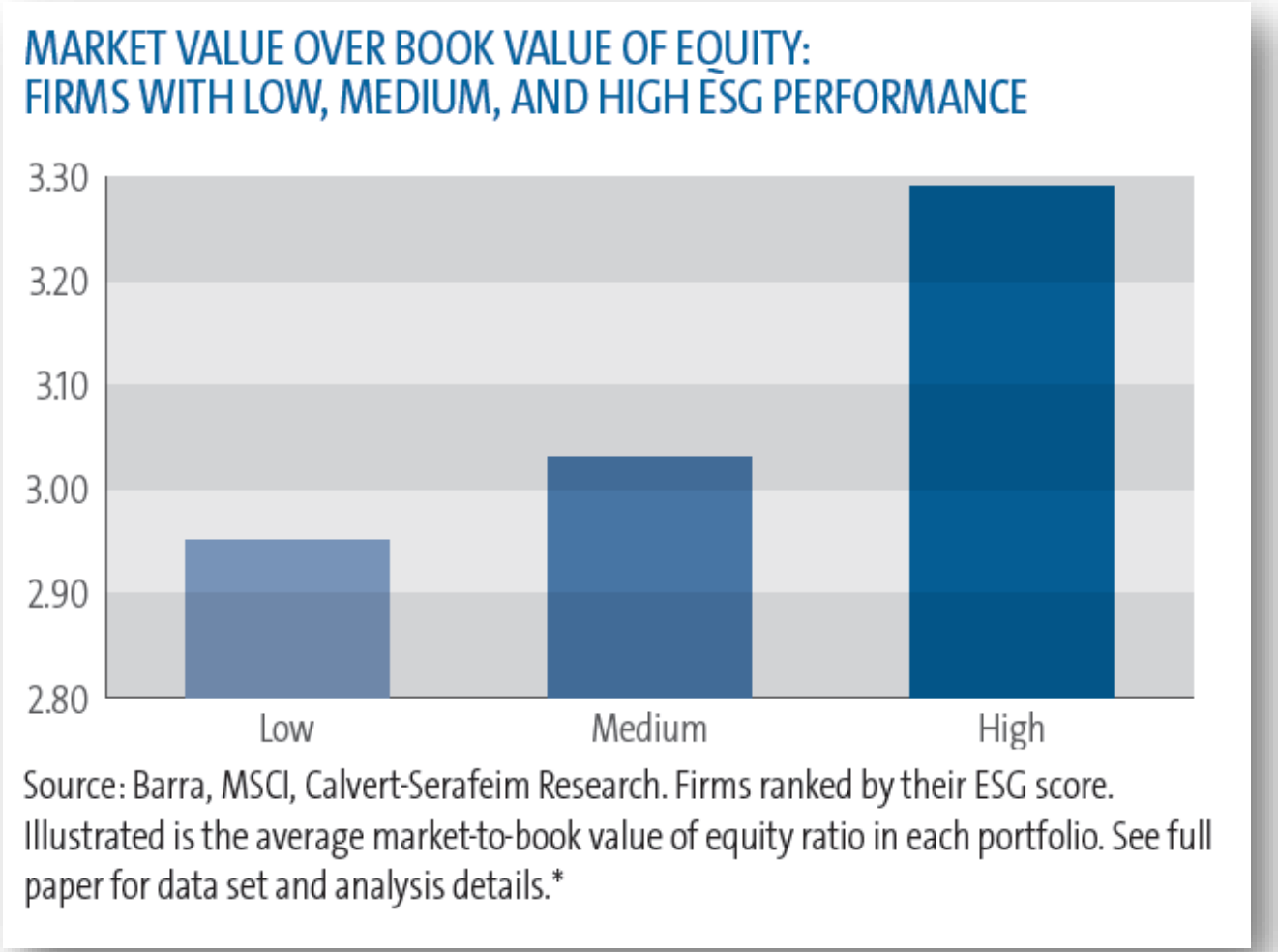


Mainstream investor interest

ESG related risks most likely to impact decisions

"A company's ability to manage environmental, social, and governance matters demonstrates the leadership and good governance that is so essential to sustainable growth, which is why we are increasingly integrating these issues into our investment process."

Larry Fink
CEO, Blackrock



Corporate governance, environmental and human rights risks are most likely to alter investors' decisions

Ownership active users of ESG analytics

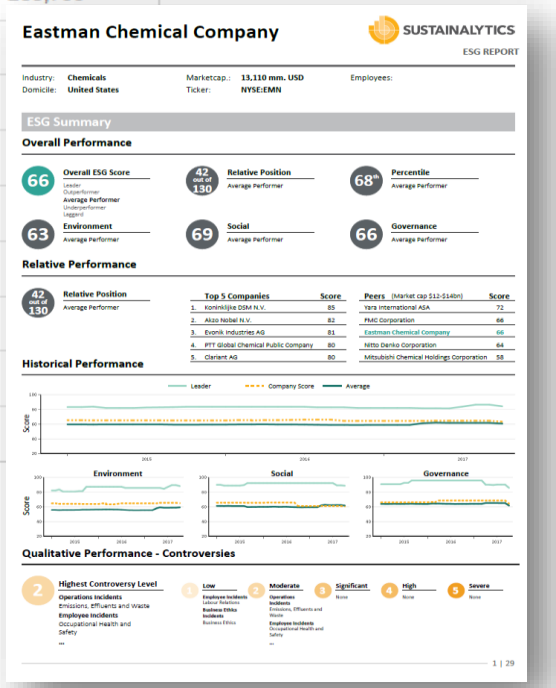
Screening investments adds a layer of perspective on the long term risk profile.

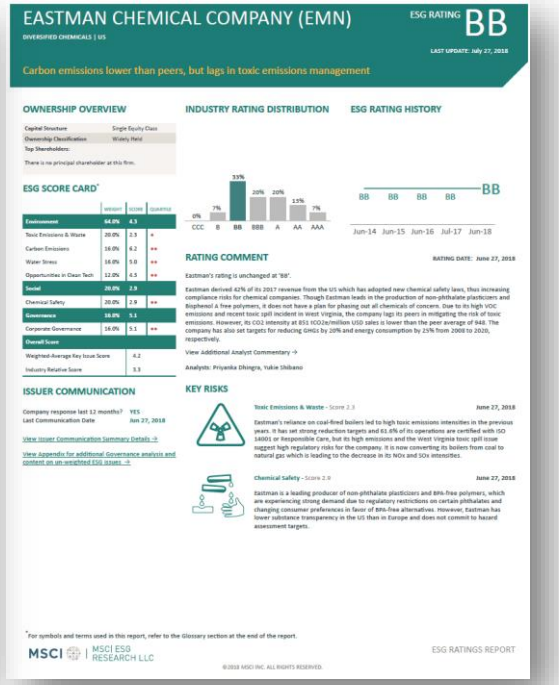
Owner Name	Date	Shared Held	Change (Shares)	Change (%)	Value (in 1,000s)
VANGUARD GROUP INC	12/31/2017	13,865,811	(147,445)	(1.05)	1,423,880
BLACKROCK INC.	12/31/2017	12,147,844	320,786	2.71	1,247,462
STATE STREET CORP	12/31/2017	7,166,430	(10,261)	(0.14)	735,921
JPMORGAN CHASE & CO	12/31/2017	6,775,285	260,714	4.00	695,754
LSV ASSET MANAGEMENT	12/31/2017	4,303,117	(1,415)	(0.03)	441,887
FMR LLC	12/31/2017	2,969,332	(1,289,718)	(30.28)	304,921
AMERIPRISE FINANCIAL INC	12/31/2017	2,763,646	(167,335)	(5.71)	283,799
NORGES BANK	12/31/2017	2,683,956	1,141,645	74.02	
OPPENHEIMERFUNDS, INC.	12/31/2017	2,503,072	(14,566)	(0.58)	
DIMENSIONAL FUND ADVISORS LP	12/31/2017	2,272,556	34,369	1.54	
NORTHERN TRUST CORP	12/31/2017	1,808,513	(23,173)	(1.27)	
GEODE CAPITAL MANAGEMENT, LLC	12/31/2017	1,799,218	34,079	1.93	
VICTORY CAPITAL MANAGEMENT INC	12/31/2017	1,700,749	1,672,883	6,003.31	
INVESCO LTD.	12/31/2017	1,640,263	(413,653)	(20.14)	
UBS ASSET MANAGEMENT AMERICAS INC	12/31/2017	1,581,835	1,137,278	255.82	

Investors prefer raters such as Sustainalytics and MSCI, which have a substantial international coverage to meet their portfolio needs.

SUSTAINALYTICS

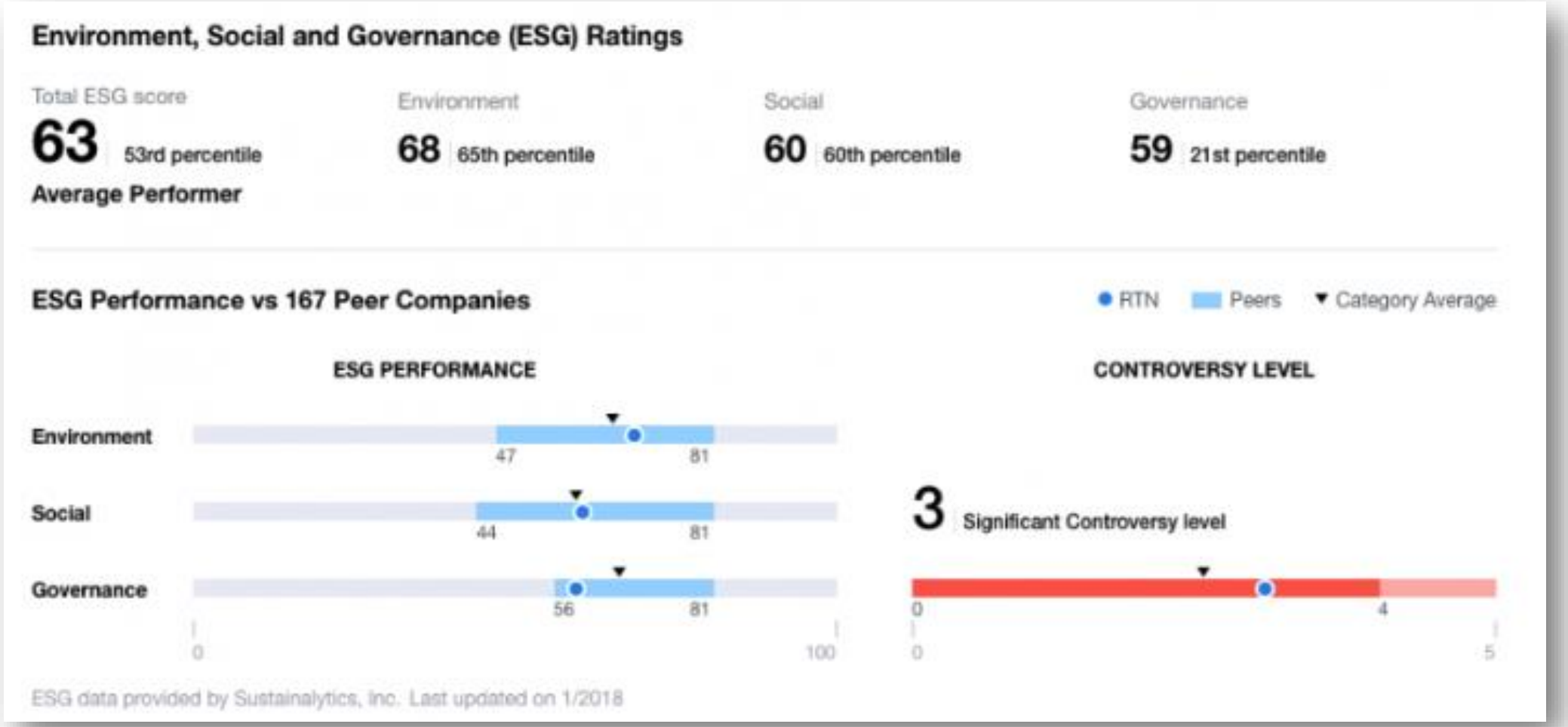
MSCI





Yahoo Finance adds ESG data

Conscientious investors can now be able to track the Environment, Social and Governance (ESG) scores of more than 2,000 publicly traded companies, only on Yahoo Finance.



Using an ESG Risk Lens to influence investments

"More and more investors at every level are looking beyond traditional financial risk to ESG-related investment risk to better evaluate companies' resiliency and performance from multiple angles."

Shila Wattamwar,
Sustainalytics' Director of Client Services

High Risk Product Involvement Areas

Alcoholic Beverages	Adult Entertainment	Gambling	Tobacco Products	Animal Testing
Fur and Specialty Leather	Controversial Weapons	Small Arms	Catholic Values	GMO
Military Contracting	Pesticides	Thermal Coal	Palm Oil	

SUSTAINALYTICS

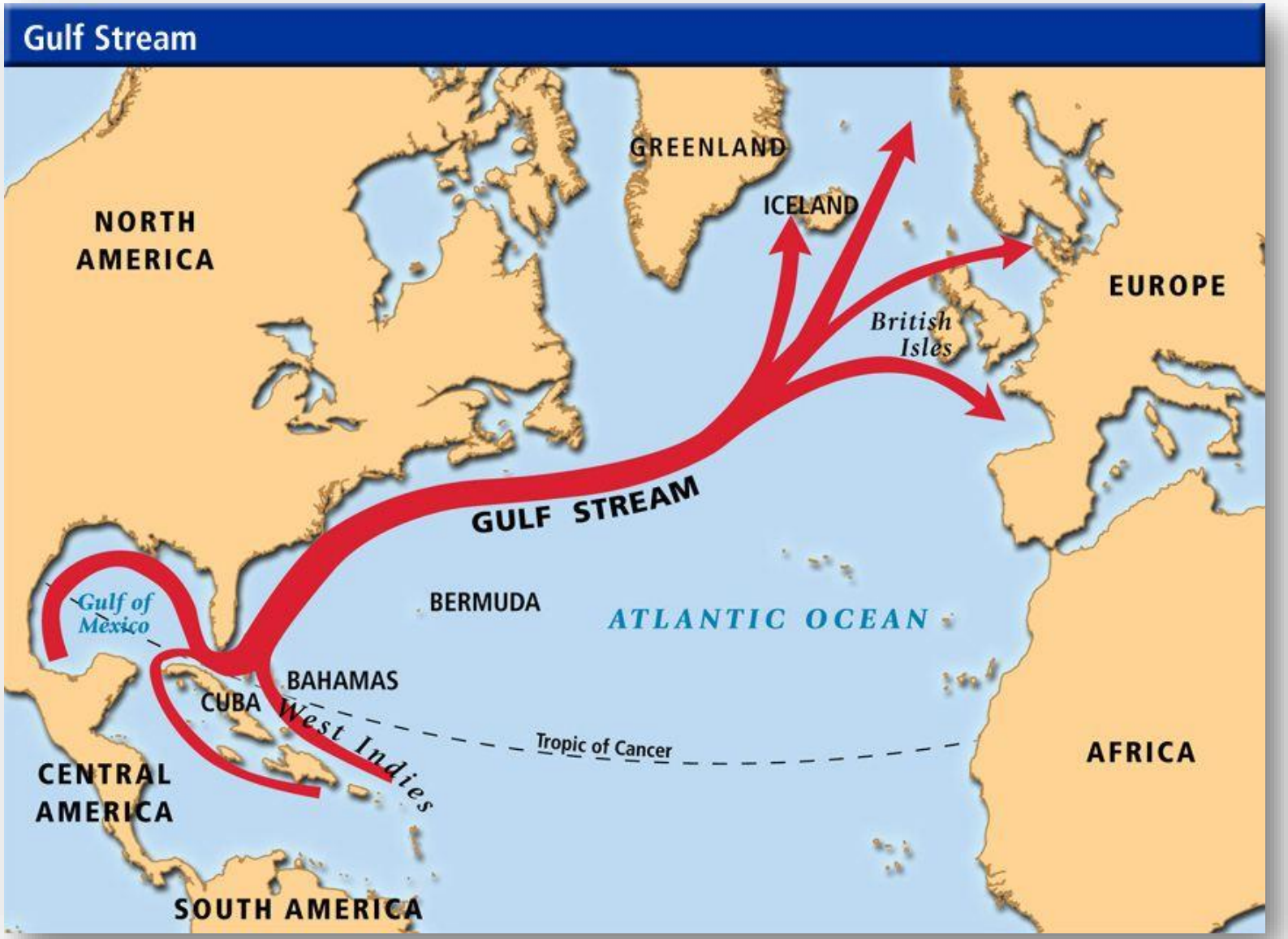
EASTMAN

FOUNDATION

Good for Good

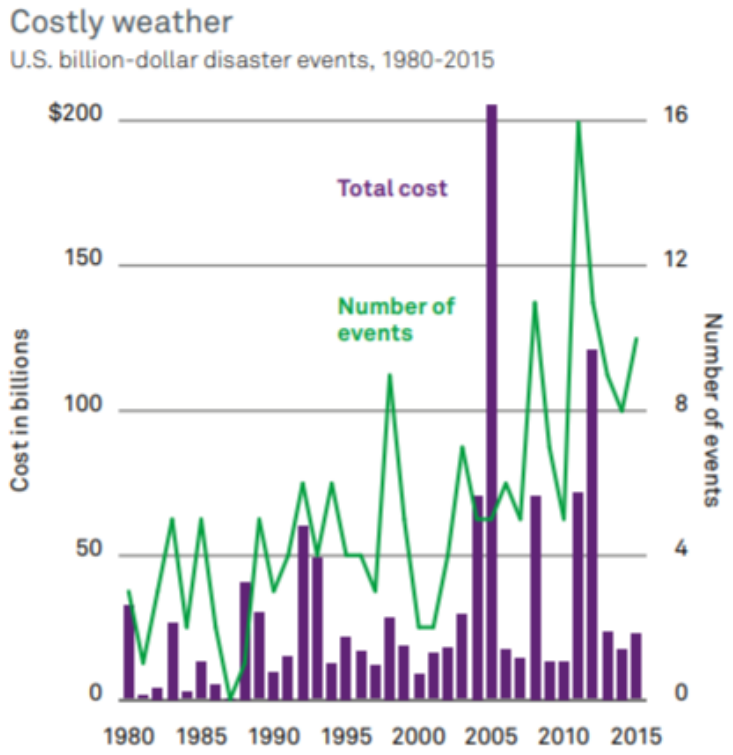
Case Study:

Why is the Eastman Foundation interested in understanding the ocean?



Atlantic Meridional Overturning Circulation (AMOC)

Severe weather events

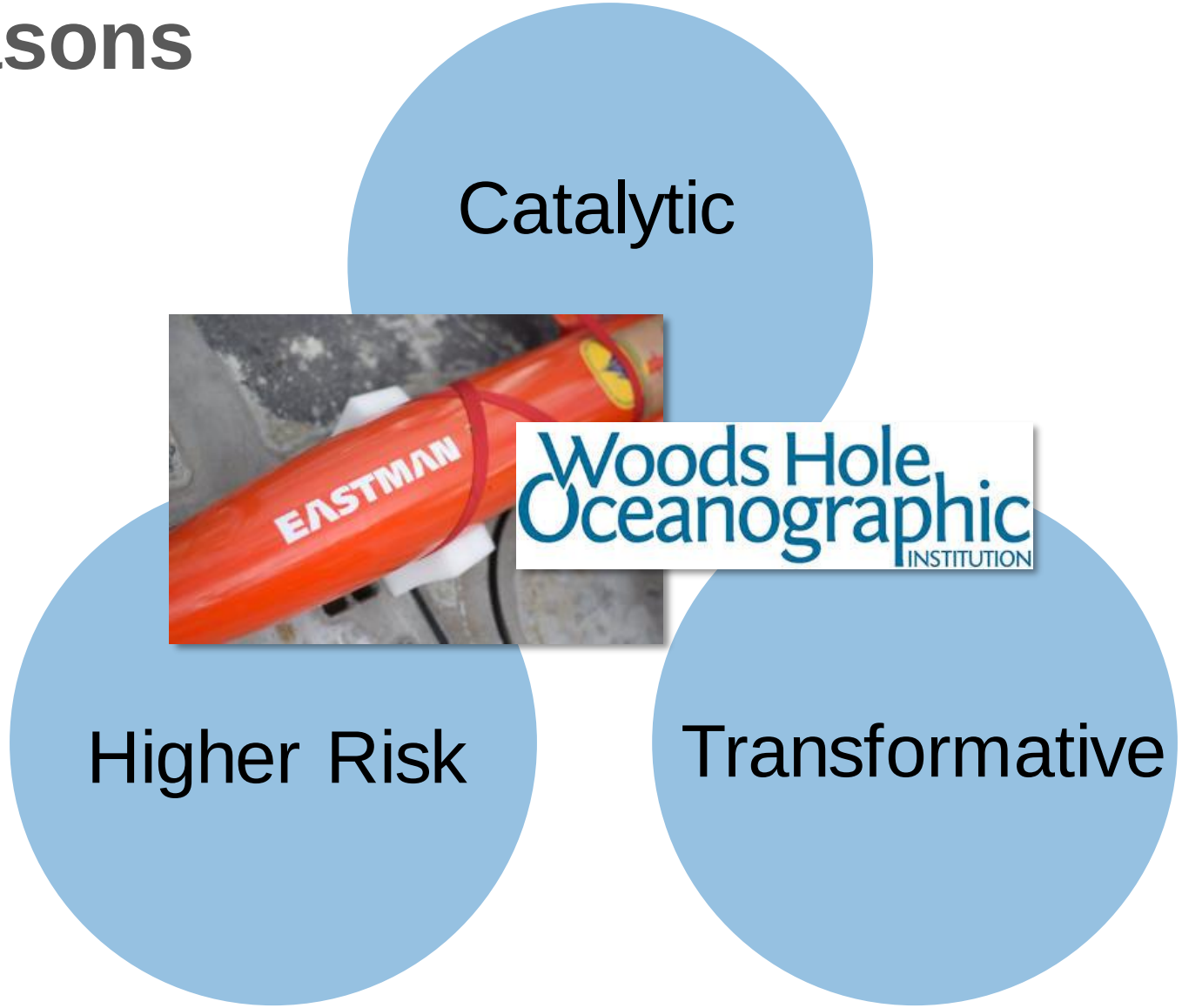


2017 Atlantic hurricane season

- 17 named storms
- Highest number of major hurricanes since 2005.
- Costliest season on record, with almost $300 billion USD in damages
- Only eleven named storms and up to four hurricanes had been predicted.

How much damage could have been prevented and how many lives could have been saved if we had a better prediction of the location, wind speeds, and storm surge of these severe atmosphere-ocean events?

Using resources in the right way for the right reasons



EASTMAN ADVOCATES FOR ACTION

DR CAROLANNE CLAYSON, DIRECTOR OF THE CENTER FOR AIR-SEA INTERACTION AND MARINE ATMOSPHERIC SCIENCES; SENIOR SCIENTIST, DEPARTMENT OF PHYSICAL OCEANOGRAPHY, THE WOODS HOLE OCEANOGRAPHIC INSTITUTION (WHOI)

DAVID A. GOLDEN, SENIOR VICE PRESIDENT, CHIEF LEGAL & SUSTAINABILITY OFFICER AND CORPORATE SECRETARY, EASTMAN

"ANY SERIOUS EFFORT TO ADDRESS CLIMATE CHANGE AND MITIGATE ITS IMPACTS MUST INCLUDE SUPPORT AND INVESTMENT IN MORE OCEAN RESEARCH"

The Eastman Foundation, in conjunction with the 2018 G7 Summit, is calling on both the public and private sectors, governments and the global community of citizens to come together to address challenges and identify innovative solutions for a better understanding of our oceans.

UNDERSTANDING OUR OCEAN

There is a good chance that weather is the most popular topic of conversation on Earth. And it is telling that so few of those conversations mention the ocean, even though the ocean is the fundamental driver of our climate, atmospheric, weather, food, energy and water systems. There is no place on the globe where the ocean does not matter.

And yet, we know so little about it.

Why is that? In many cases, we simply don't process the complexity of how the ocean relates to our everyday life. It is human nature that unless we live near a coastline or visit a beach, we do not think about the ocean, even though it covers 70 per cent of our planet.

We do not give thought to the fact that the ocean contains 97 per cent of the Earth's water or that, as an ecosystem service, the ocean produces well over half of the world's oxygen and has absorbed more than 90 per cent of the excess heat trapped in our climate since the 1950s. We do not think about the fact that 40 per cent of the world's population lives within 100 kilometers of a coastline and that the number is rising – further exposing populations to extreme weather events. It is easy to overlook the fact that 80 per cent of the protein needed to sustain our world comes from the ocean. We simply do not know what we do not know!

What if the opposite were true? What if we could truly harness the potential of the ocean to sustain and improve our world? What if we could better predict severe weather events? What if we could reduce

last decades, understanding is hampered by a significant lack of long-term, high quality, reproducible data. The ocean remains highly under-sampled, from the surface exchanges between the ocean and atmosphere all the way down to the deepest parts of the ocean. Many of the processes, and especially those that relate to interactions between the ocean and the atmosphere, are simply not well understood due to both a lack of data and the relatively small number of researchers funded to work in these areas. Similarly, relatively few direct observations exist of the ocean deeper than a mile down, and this hampers our ability to understand how the deep ocean stores and exchanges heat, salt, and carbon with the upper ocean and how it transports these properties around the globe.

It is unsurprising that these observational gaps exist, given the relative difficulty and high cost of getting scientists and instruments to remote ocean regions. Satellites can only 'see' the surface of the ocean, below which scientifically-based inferences must be made in many cases to relate observed surface properties to deeper ocean aspects such as circulation and temperature structure.

INVESTING IN INNOVATION

A significant area of uncertainty in climate science and one of the biggest limitations on our ability to predict the timing, location and impacts of climate change is our limited understanding of ocean processes and their interactions with the atmosphere, land, and ice systems.

Any serious effort to address climate change and mitigate its impacts must include support and investment in more ocean research. Understanding how much heat and carbon the ocean absorbs is vital to understanding sea level rise and predicting how much, how fast, and where the atmospheric temperature will change.

Climate models can only make calculations based

World Ocean Summit
March 8 at 2:31am ·

David Golden, chief legal and sustainability officer; corporate secretary, Eastman shares his views during panel discussing - the science of being understood

642 Views

Like Comment Share

World Ocean Summit
March 7 at 3:15pm ·

Big data, AI, state-of-the-art observation technologies: new tools and methods are helping to unlock complex ocean systems, potentially transforming ocean science. Translating these advances, particularly for policymakers, will require creativity too. Join David Golden, chief legal and sustainability officer, Eastman, Gary Gysin, chief executive officer, Liquid Robotics, Victor Zykov, director of research, Schmidt Ocean Institute, Daniela Fernandez, founder and chairperson, Sustainable Oceans Alliance at #OceanSummit. Learn more at >> https://goo.gl/LdMSqZ

Like Comment Share

Estimulando la Innovación

Debido a que el océano y la vida marina son fundamentales para nuestro clima y sistemas climáticos, la Fundación Eastman apoya a la Institución Woods Hole Oceanographic (WHOI) en el desarrollo de formas innovadoras de observar y medir los procesos de los océanos.

Estos nuevos instrumentos permitirán a los científicos recopilar datos en lugares nuevos y a mayor profundidad, a medida que expanden las fronteras para observar y comprender el papel de nuestros océanos en el clima e investigar, cómo nuestro cambiante planeta afecta la vida marina y los sistemas de agua.

Más información en responsibility.eastman.com

EASTMAN FOUNDATION

Good for Good

Questions …