

Ocean Acidification: Findings from Opinion Research in the U.S.

Prepared by:



Presentation to the Washington OA Blue Ribbon Panel
May 23, 2012

Research Objectives

- Project grew from increasing focus and concern from scientific community on impacts of atmospheric CO₂ levels on ocean function
- Gathered input from scientists and worked closely with Ocean Conservancy as the communications experts

- 1. Assess concern about various ocean threats**
- 2. Assess perceptions of ocean's role for individuals, society and the planet**
- 3. Assess concern about various types of ocean pollution**
- 4. Introduce ocean acidification and benchmark key metrics**
- 5. Test narratives to raise the profile of the issue**
- 6. Test “fact-focused” and “values-focused” statements about OA**
- 7. Test societal and personal solutions**

Overview

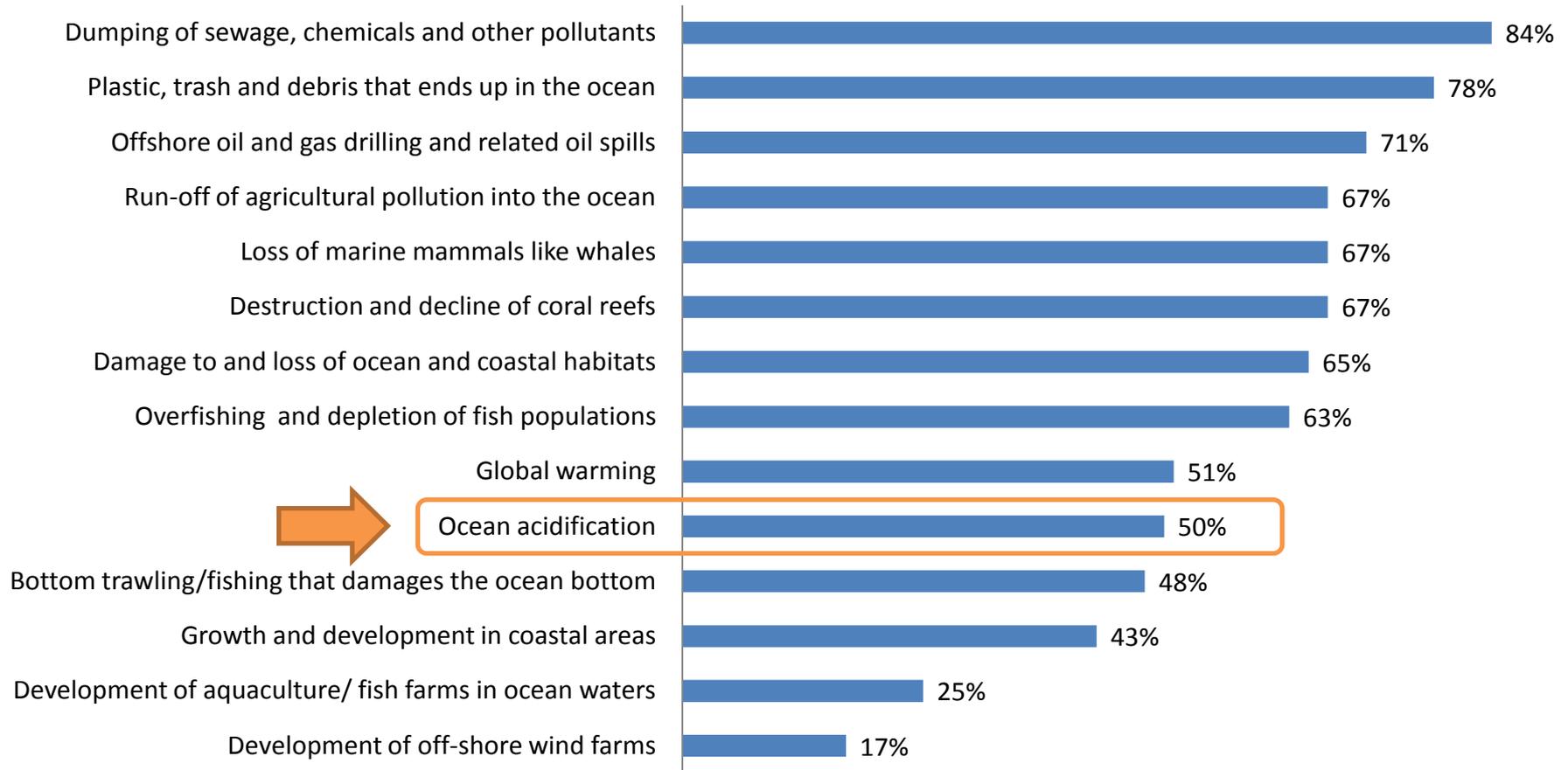
- Ocean acidification is a new issue for the public
 - Relatively unknown
 - Not dominated by any particular perspective, interest group or frame of debate
- Great opportunity to establish the issue and broaden the conversation about human impacts
 - Helping people understand it requires “refreshing” their mind on basic roles of the ocean in earth’s systems
- Moving from abstract to specific is critical
 - Bring people and places into the picture
 - Science and ocean stakeholders need to answer the question, “What does this mean for me?”
- Plan for misperceptions about ocean function that lead to indifference
 - Natural cycles
 - “Resiliency”

Current Context

Perceptions of Threats to Ocean Health

- As an issue, ocean acidification not well known.
- But the name alone may be generating concern.

% among most + very serious

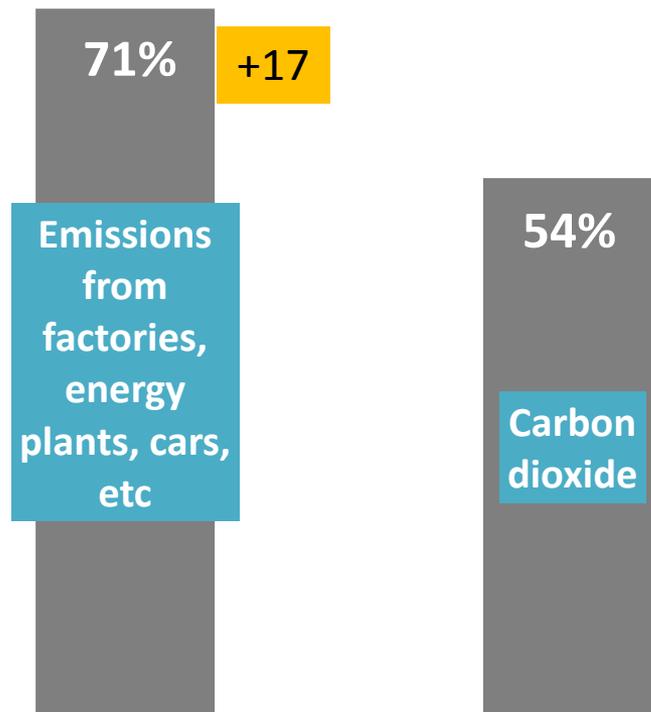


Q. We are asking about the world's oceans overall. How serious a threat to the health of the oceans are each of the following:

Carbon Dioxide as a Problem for Ocean Health Is Not Intuitive

- In a question measuring concern over specific pollutants, “emissions from factories, energy plants, cars, etc.” was rated as a much more serious ocean threat than “carbon dioxide”

Threats to the Ocean (Most + very serious)



I have to confess I've forgotten my chemistry courses, but CO2 is for plants. They live off the CO2. So I wouldn't think of it as a pollutant.

I didn't really know about the oceans absorbing carbon. It makes you understand how air pollution and the ocean are very interrelated.

I think air pollution does pollute the ocean. It travels over; it rains; it goes into the water; it evaporates back up; it's in the clouds; it's moving around again; it is dropping again. It stays in the ocean and it is polluting that.

The Ocean Is Universally Understood to Be Essential for Life on Earth

- But, the link that a living ocean is what supports life on earth – not just the water itself – is more tenuous

“I suppose it is quite selfish, you can manage quite well without fish but you cannot manage without air without oxygen to breathe. The population is rising all the time.”

“Well, technically, it’s less important than the air we breathe because that is obviously the most imminent. If we are not breathing, we are dead. The ocean would be second underneath it. “

“We don't need the ocean for food.
You can be a vegetarian.
Or you can raise livestock. I don't believe you have to eat the ocean to survive. You can raise other things.”

Respondents Were Given a Description of Ocean Functions and Acidification

On the next few screens we would like you to read some information about the ocean. Then you will be asked some questions.

Even if you live nowhere near the ocean, you still experience the ocean's influence on our Earth system. The ocean plays several very important roles for the planet.

- The ocean is the primary driver of weather and climate.
- It is a source of clean fresh water -- most of the rain that falls on land comes from the tropical ocean.
- The plankton (microscopic plants) that live in the ocean are responsible for almost half the oxygen we breathe
- And, the ocean absorbs carbon dioxide from the atmosphere.

Today there is more carbon dioxide in the atmosphere than any time in human history due to the burning of coal and oil deposits by the world's populations. This carbon is being released that would otherwise remain trapped in coal and oil deposits deep in the ground.

The ocean has continued to absorb these increasing amounts of CO₂, but this has caused changes to the ocean's water. In our lifetime the ocean has become measurably more acidic.

Reactions to Ocean Acidification Explained

Whatever comes out of the power station is taken up and dissolved to some degree by the rain and then it falls not only on the land but also into the ocean.

It doesn't sound good. If you change the chemistry of the ocean, it is like changing the chemistry of your blood. The animals and plants that are living there are definitely going to be affected one way or the other not necessarily in a good way.

With the ocean being more acid many of the fish living in the sea will die or they will change their metabolism, and their reproduction will be maybe less...

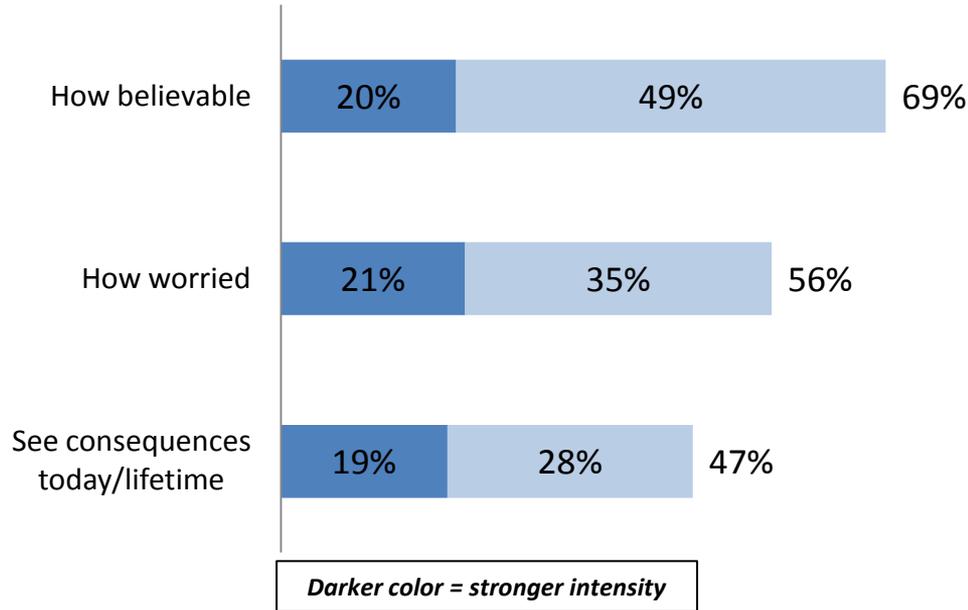
This is the first time I've heard about this. There is obviously a problem, but it's an issue I don't know enough about. I would need to read more about it. I believe there is a problem, but I do not know what to do about it.

The fish are going to die. It is happening. They find certain areas where they have no idea why so many fish are floating up for no reason.

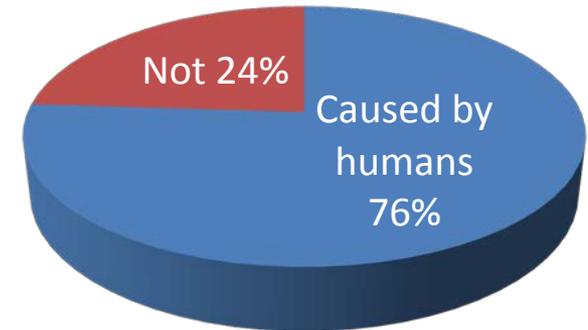
Hearing About the Problem Generates Widespread - But Not Deep - Concern

- Consequences seem more likely to be in the future
- 3 in 4 Americans (76%) believe humans are causing OA, absent a very public debate about the science

The statement indicated that amount of carbon dioxide in the atmosphere that the ocean is absorbing is changing the ocean's chemistry . . .



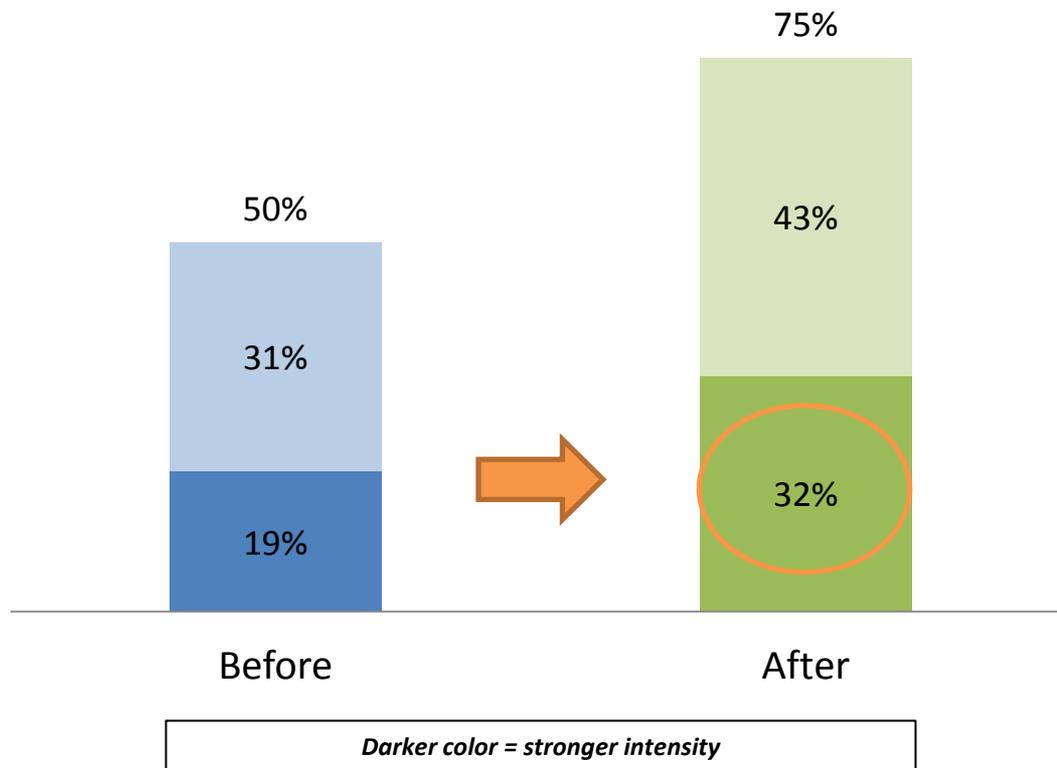
Assuming the ocean is becoming more acidic as a result of absorbing increasing amounts of carbon dioxide, do you think it is...



- Q. How believable is it that the ocean is absorbing amounts of carbon dioxide large enough to cause the ocean's chemistry to change?*
- Q: How worried are you about this problem?*
- Q: Does this seem like a problem that: Has consequences for people today, Will have consequences for people in my lifetime, Will have consequences for future generations, May or may not have consequences for people in the future?*

A Description Increases the Perception that OA is a Threat to Ocean Health

- The description (without impacts) does increase the perception that ocean acidification is a threat to ocean health
- At the same time, focus group participants raised a lot of questions



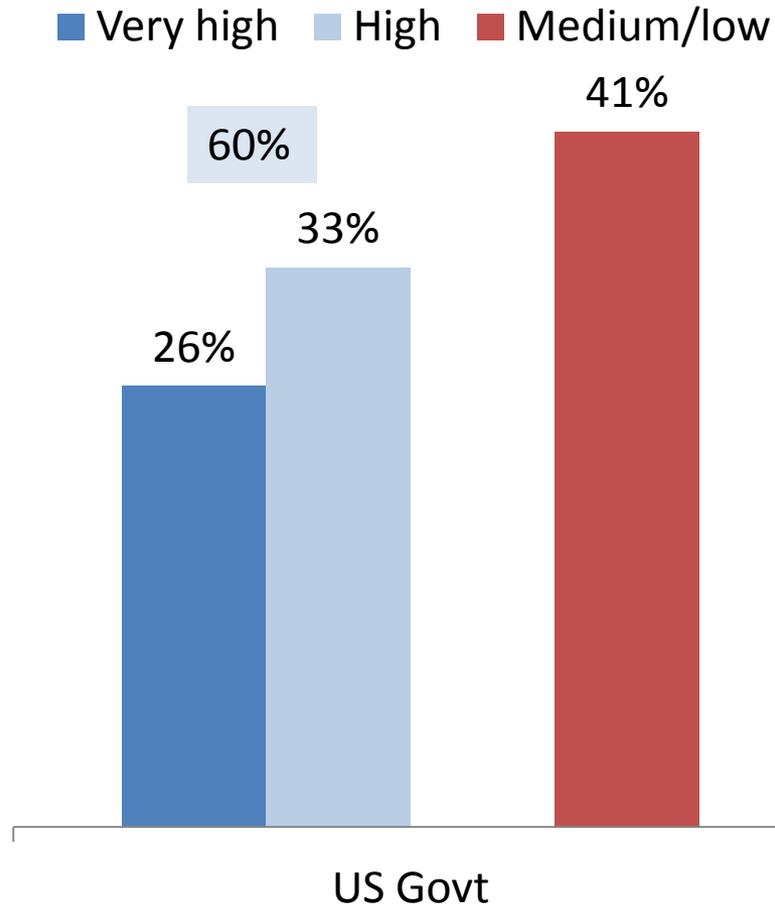
- *“Well, if it is a true statement, then for everything that we use the ocean for, how is it going to affect the future?”*
- *“I can't say from a scientific view that I agree or disagree. There aren't as many fish to catch. Is that because it is being overfished or is that because the ocean is changing?”*
- *“It makes me wonder what the breaking point is for different species.”*

Q. How serious a threat to the health of the oceans are each of the following...?

Q: How serious a threat to the overall health of the ocean does this seem?

Few Consider OA a Top Priority

- There is not agreement on the priority of this issue
- Lack of urgency presents a barrier to engagement and addressing the problem



I was not really clear how it was going to affect me personally, it is really sad that a lot of sea creatures are going to die out but it was not really explained to me how that was going to affect me personally. If it is the case that the sea gets more acidic and therefore produces less oxygen then that is more important.

Q. Do you think addressing the problem of increasing acidity of the ocean as a result of absorbing too much carbon dioxide should be a low, medium, high, or very high priority for the US government to address?

Testing Narratives

Respondents were split into 4 groups and each read a different pseudo news story...

Story A: Just the Facts



Story Focus: Just the Facts/Link to Climate Change

Proposed Solution: CO2 Emissions Reductions

Story B: Local/Humanize



Story Focus: Localize/Humanize the Problem

Quoted: Coastal fishermen/citizens

Proposed Solution: Zoning the coast for alternative energy/stopping offshore oil

Story C: Not Climate Change



Story Focus: OA is Not Climate Change

Quoted: Marine and geo-chemical scientists

Proposed Solution: Prioritize solutions for what is happening now/stopping other stressors/establish global coordinated research

Story D: Business Case



Story Focus: Business Case

Quoted: Businesses, entrepreneurs

Proposed Solution: Free market development of technological solutions

Key Metrics for Each Narrative

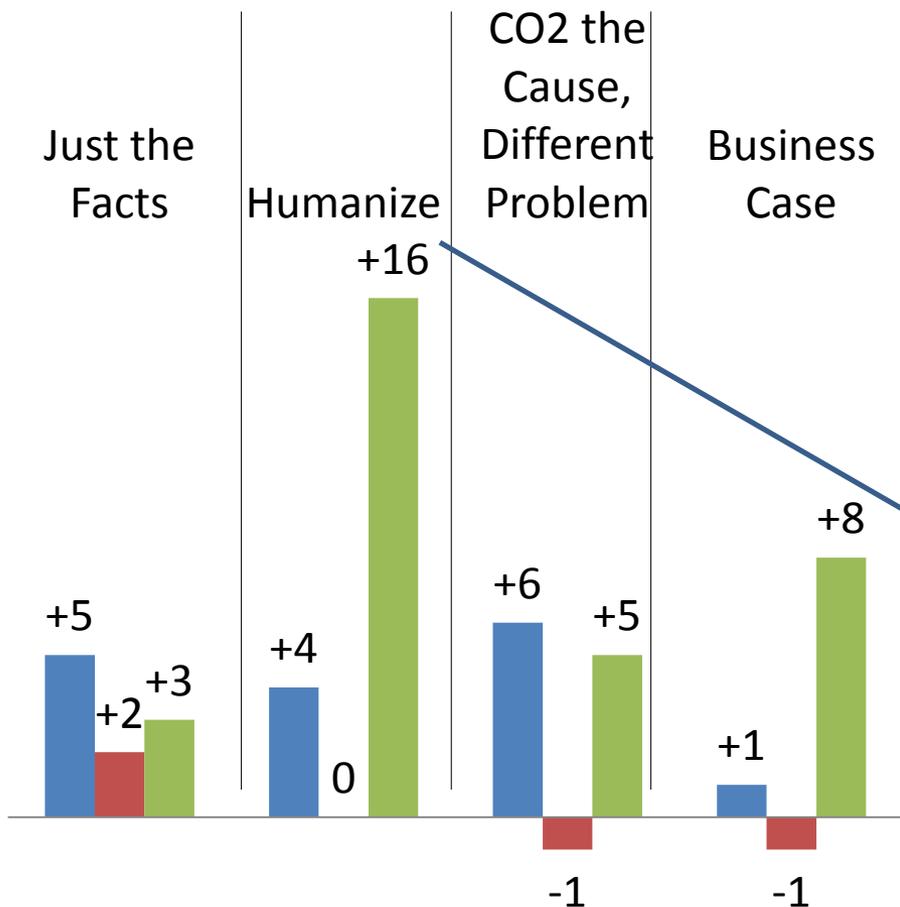
- 1. Believable** – How believable is it that the ocean is absorbing amounts of carbon dioxide large enough to cause the ocean’s chemistry to change?
 - Certain it is true
 - Very believable
 - Somewhat believable
 - Not too believable
 - Not believable at all

- 2. Concern** – How worried are you about this problem?
 - Extremely worried
 - Very worried
 - Somewhat worried
 - Not too worried
 - Not worried at all

- 3. Consequences** - Does this seem like a problem that: Has consequences for people today, Will have consequences for people in my lifetime, Will have consequences for future generations, May or may not have consequences for people in the future?

Post-Narrative Movement on Key Metrics

- change in Believable
- change in Concern
- change in Consequences

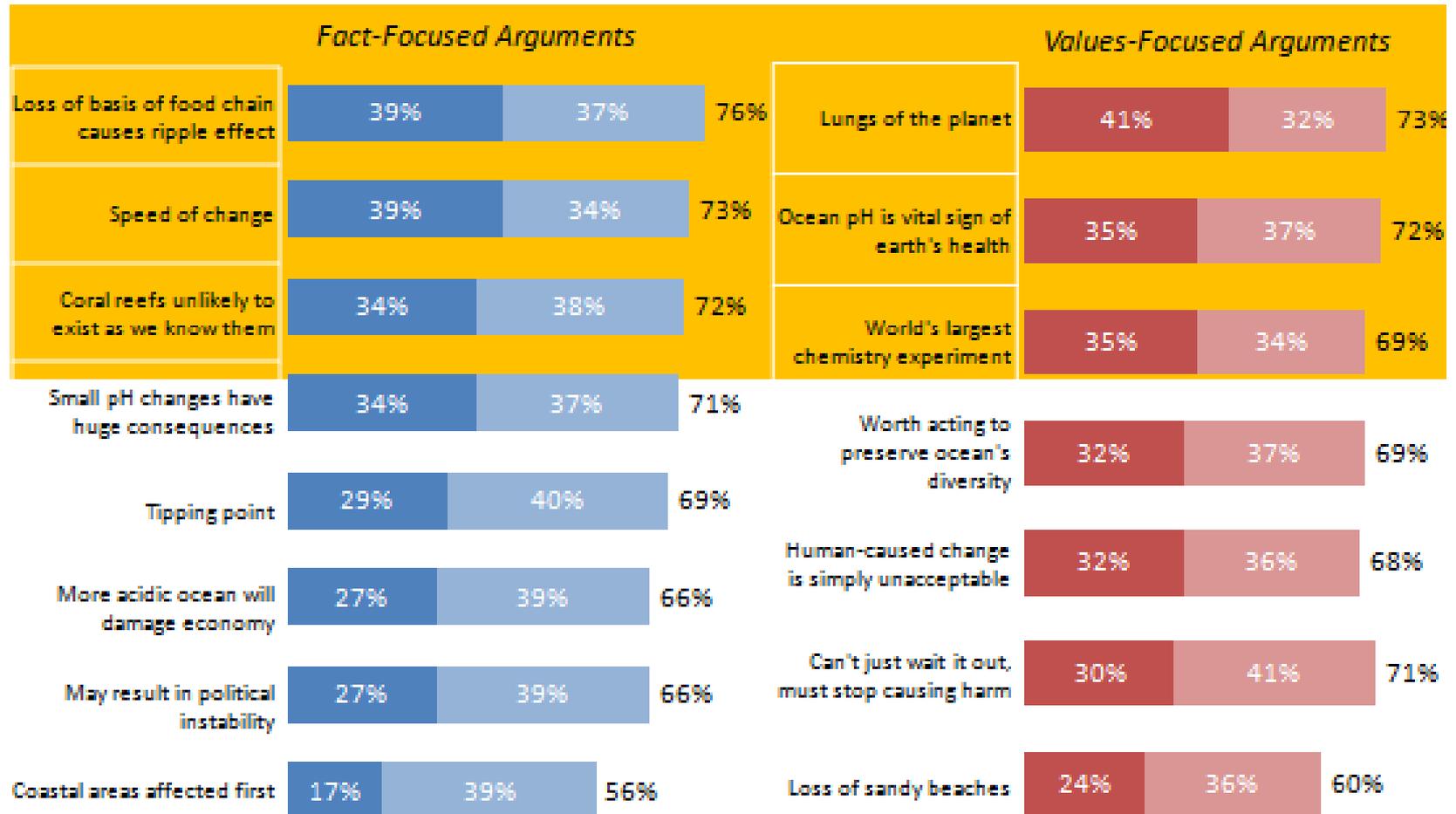


- The narratives have different levels of success shifting attitudes
- It is hard to move personal concern
- Establishing the problem in its own right and emphasizing that change is measurable now boosts believability the most
- Humanizing the problem’s impacts create the greatest sense of real consequences happening today

EXCERPT: The federal government is saying go ahead and drill off our coast,” said shellfish harvester Kevin Rhodes. “Ultimately, that’ll mean more emissions that will hurt us down the line. We can find another way to make energy. We can’t find another way to make fish.”

Reactions to Supporting Information

- Results suggest analogies and values-based arguments can be as compelling as facts
- In focus groups the “speed of change” argument was the only effective counter to public perceptions of the ocean’s resilience



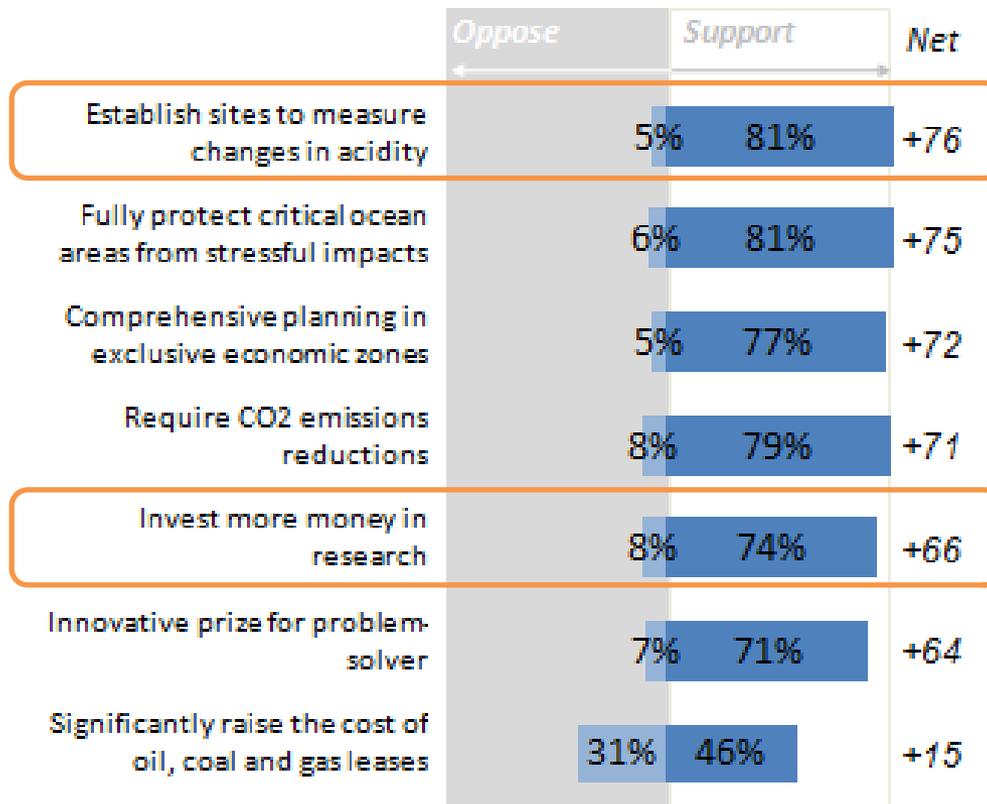
Darker color = one of the most concerning statements; Lighter color = very concerning

Q. Here are some statements about the causes and impacts of the ocean becoming more acidic. For each, please indicate how much the statement concerns you personally?

Public Support for Further Monitoring

- Nearly all proposed solutions are widely supported – it is more effective to talk about monitoring and measurement than general “research”
- Experience suggests that public supports differs from policymakers in these areas

US Respondents



“They are talking mostly about certain sea life being affected like shells and coral and the quality of the water that we can't apparently see. If we can see examples of how it would specifically affect us, that would help.”

Below are some of the ideas that have been suggested as ways for countries like the United States to respond to the problem of an increasingly acidic ocean. Please indicate your level of support for each.



Implications For Communications

An evocative problem that needs to be established

The role of the living ocean is not well-understood

Human interest stories with visually compelling images bring the problem home

Natural cycles and resilience are roadblocks to urgency

Specificity makes the case for research investments

Findings and Implications

The role of the living ocean is not understood; lay the groundwork

- Reminding people of the functions of the ocean is a needed first step in explaining the problem.
- But if this just a chemistry lesson people will not engage
- Explaining the carbon/oxygen exchange seems to get people thinking about themselves as well as the ocean – leading to a greater understanding of how critical a *living ocean* is, not just a salt water body.

Establish the problem – use visuals, analogies and local stories

- Just the label intuitively concerns, a “just the facts” definition increases that concern
- Human interest stories help illustrate cause and effect. People related to examples and analogies—lungs of the planet, EKG of the ocean, a fish tank’s changing chemistry.
- Direct cause and effect is compelling; this is happening now
- The problem needs to be established and science is the credible voice

More Findings and Implications

Although people start with different knowledge, many end in the same place

- Global nature of OA feels overwhelming to people.
- Many felt sad and defeated by the information and retreated to a focus on “doing their bit.”

So we need to take them on a different journey

- Firmly establishing a problem before introducing solutions has strong precedence in communications.
- Make the case for local impacts now and the need to understand them.
- This leaves the door open to a dialogue about longer term approaches and solutions.

Natural cycles and resilience are challenges to understanding and action

- The lay public does not understand “cycles” and “resilience” according to the scientific definitions of the term. They think the ocean is so big it might all shake out in the end.
- Communications need to stress the level of OA change/rates aren’t natural;
- “Changing the ocean’s chemistry,” “measurable impacts” help overcome these barriers to natural sounding changes

Relevant, measurable and timely.

A problem that has local, measurable impacts.

Its current impacts and future threats are sufficiently concerning to act.

Washington can take action now.

For additional information, please contact:

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