

Bridging the Values Gap between Geoscience and Public Policy Making Is Hard Work

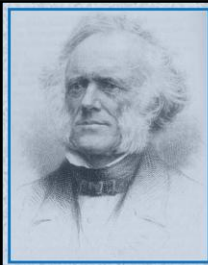
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Geological Society of America
November 6, 2012**

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Photo: Library of Congress

**THE THOUGHTS EXPRESSED HERE ARE
THE PRODUCT OF SEVERAL DECADES OF
COOPERATION AND CONFLICT WITH PUBLIC
OFFICIALS AT THE STATE AND LOCAL LEVEL.**



The values of geoscience and public policy making are rooted in dissimilar intellectual and cultural traditions.

This disparity creates a values gap that is a troublesome obstacle to solving critical resource, environmental, and land use problems.

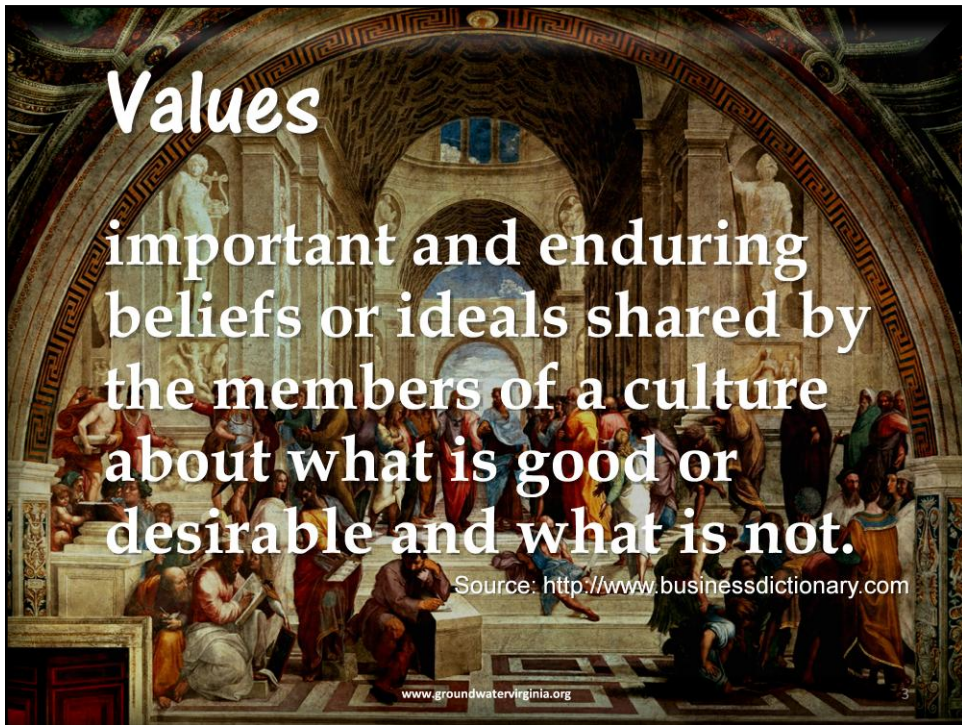


Geoscientists can narrow this gap and support constructive policy making by vigorously promoting geoscience in the public arena.

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THE THEME OF THIS PRESENTATION CAN BE SUMMARIZED IN THREE CHIEF POINTS.



A SET OF VALUES MAY BE VIEWED AS THE PRINCIPLES THAT SHAPE THE CONDUCT OF THE MEMBERS OF THE TRIBE. ON THE NEXT FEW PAGES, I WISH TO DRAW A DISTINCTION BETWEEN THE VALUES OF GEOSCIENCE AND THOSE OF PUBLIC POLICY MAKING.



Geoscience values guide research and serve as the basis of ethical conduct.

- *commitment to objectivity*
- *fidelity to scientific method*
- *insistence on verifiability*
- *openness to critical evaluation*

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I BELIEVE THAT IT IS THESE VALUES THAT MAKE GEOSCIENCE SUCH A POWERFUL INSTRUMENT IN MAKING CONSTRUCTIVE PUBLIC POLICY.

The values of public policy making reflect their political pedigree.

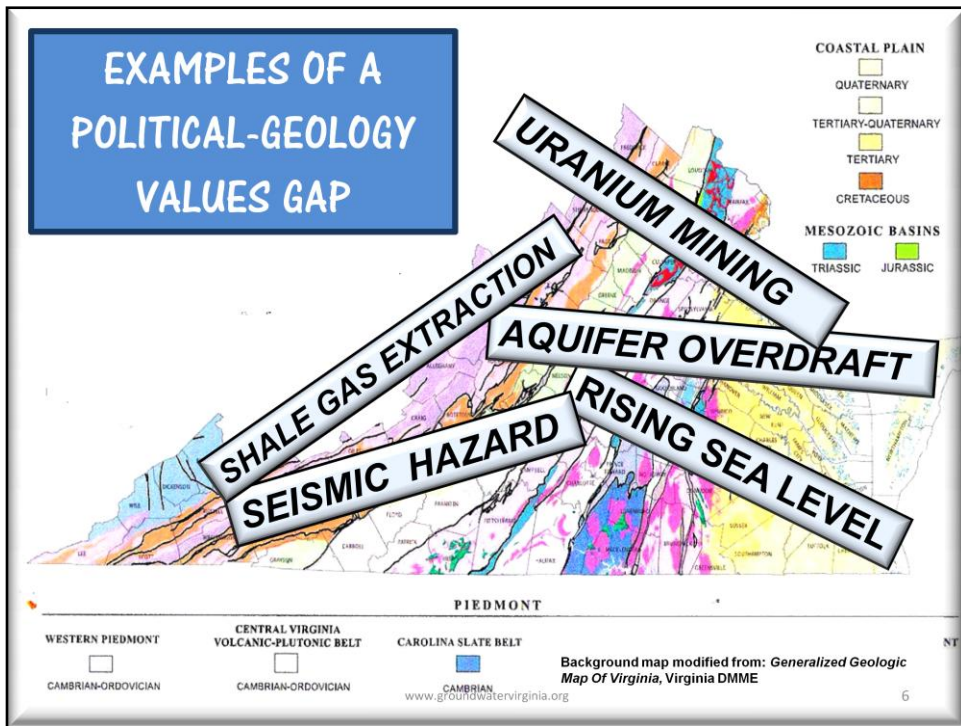


- *acceptance of subjective judgments*
- *fidelity to political doctrine*
- *casualness toward strict verifiability*
- *impatience with critical evaluation*

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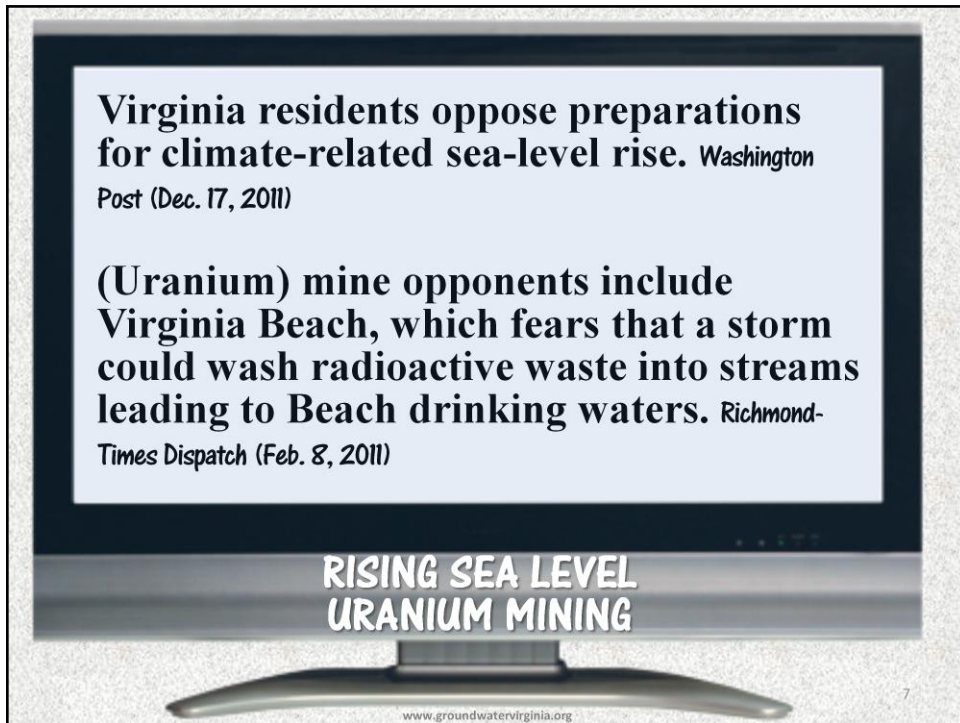
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THERE'S NO ESCAPING THE POLITICAL PEDIGREE OF POLICY MAKING VALUES. ITS IMPORTANT TO NOTE THAT THESE VALUES DON'T ALWAYS PRODUCE RESULTS THAT MATCH THE LOGICAL RIGOR AND EMPIRICAL RELIABILITY OF SCIENTIFIC ANALYSES.



THE NATURE OF THE VALUES GAP BETWEEN GEOSCIENCE AND PUBLIC POLICY MAKING IS ILLUSTRATED BY SEVERAL THORNY POLITICAL ISSUES CENTERED ON GEOLOGIC PHENOMENA AND NOW PLAYING OUT IN VIRGINIA.

THESE POLITICAL-GEOLOGY ISSUES ARE RATHER MESSY MIXTURES OF SCIENTIFIC AND TESTIMONIAL KNOWLEDGE -- BURSTING WITH VALUES CONFLICTS. LIKE SO MANY VALUES ISSUES, THE PUBLIC DEBATES BECOME A KIND OF MORALITY PLAY – PITTING VICE VS. VIRTUE.



**VALUES CONFLICTS ARE READILY EVIDENT
IN THESE CONTROVERSIES, AS THEY HAVE BEEN
REPORTED BY THE NEWS MEDIA.**

The magnitude-5.8 quake is reshaping a national public debate over safety standards for nuclear reactors in central Virginia and other areas more vulnerable to seismic upheaval than once thought.

Richmond Times-Dispatch (Sep. 18, 2011)

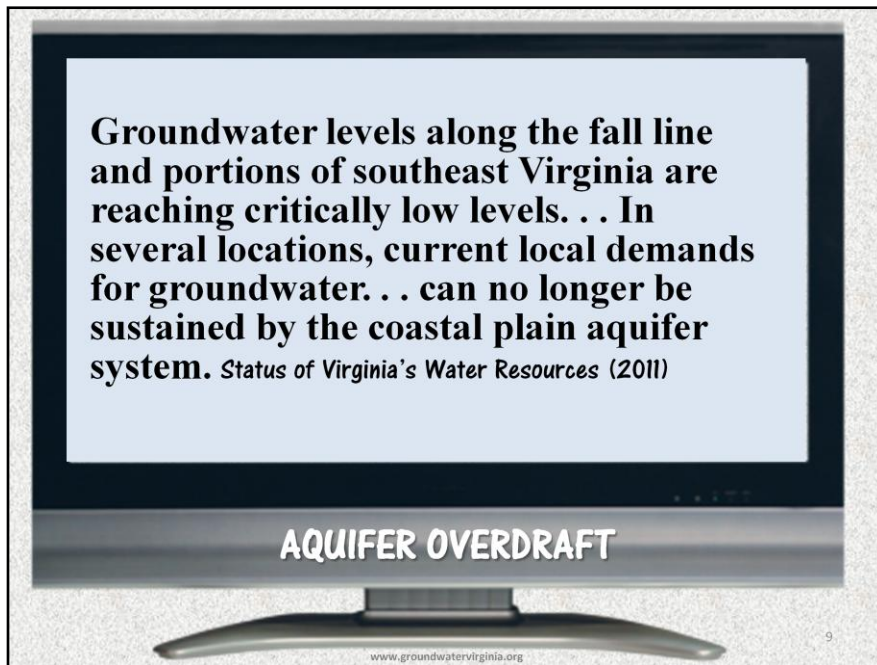
With deep concerns over fracking, a Va. county says no to more gas drilling.

Washington Post (Feb. 5, 2012)

**SEISMIC HAZARD
SHALE GAS EXTRACTION**

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AQUIFER OVERDRAFT ON THE VIRGINIA COASTAL PLAIN, A HOME TO MORE THAN 3 MILLION PERSONS, IS A TICKING SOCIETAL TIME BOMB. DESPITE THE PROBLEM'S FAMILIARITY TO WATER SUPPLY PROFESSIONALS, IT HAS SO FAR BEEN LARGELY IGNORED BY THE PUBLIC AND THE MEDIA.

THESE POLITICAL-GEOLOGY ISSUES ARE SO TROUBLESOME BECAUSE:

**FIRST, THEY EXHIBIT EXISTENTIAL CHARACTERISTICS THAT MAKE THEM DIFFICULT TO VISUALIZE AND COMPREHEND BY NONSCIENTISTS, AND
SECOND, THEY EMBODY SEVERAL PROMINENT HUMAN VALUES.**

Existential Characteristics of Political-Geology Controversies

- ✓ Extraordinary events and processes with complex causes, may evoke dread fears
- ✓ Largely opaque to direct observation
- ✓ Change slowly over time or occur suddenly in the future with little or no warning
- ✓ Scientific foundation poorly understood by the general public

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ALTHOUGH THE NATURAL PHENOMENA OF THE CONTROVERSIES MAY BE FAMILIAR TO GEOSCIENTISTS, THEY ARE LARGELY BEYOND THE EXPERIENCE OF MOST CITIZENS – AND MANY POLICY MAKERS.

THEY ARE CHARACTERIZED BY:

EXOTIC EVENTS AND PROCESSES THAT ARE DIFFICULT TO WITNESS DIRECTLY, THAT OCCUR WITHIN AN EXCEPTIONAL TIME FRAME, AND THAT REQUIRE SPECIALIZED TECHNICAL AND SCIENTIFIC KNOWLEDGE TO FULLY UNDERSTAND.

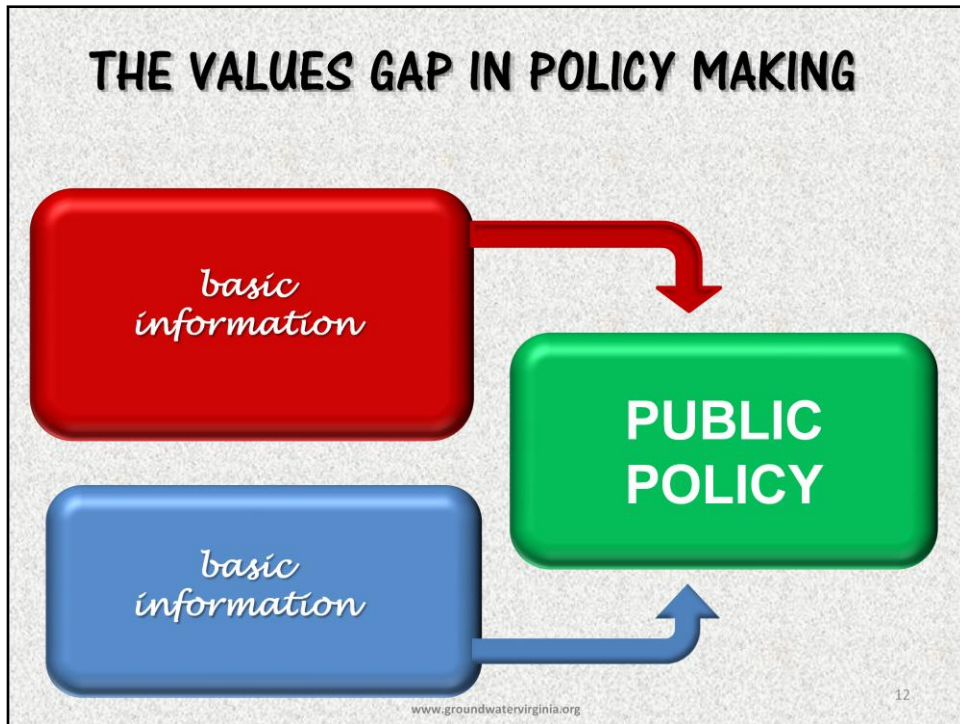
Human Values Issues That Underlie Political-Geology Controversies

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- ✓ **Health and safety**
 - ✓ **Environmental degradation**
 - ✓ **Natural resource depletion**
 - ✓ **Property damage or loss**
 - ✓ **Citizens' rights and liberties**

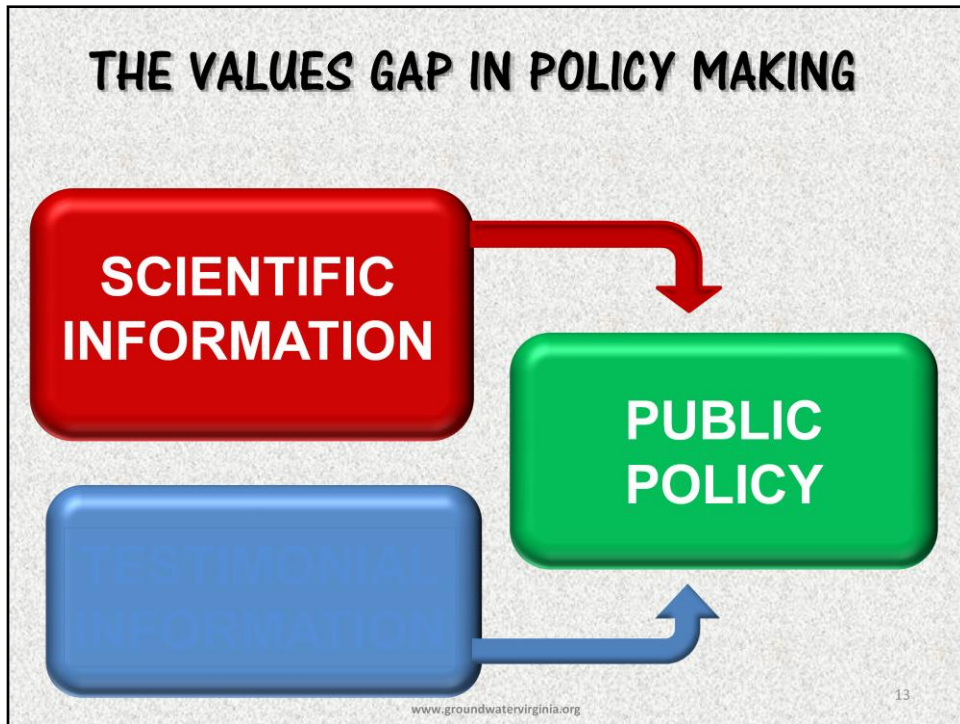
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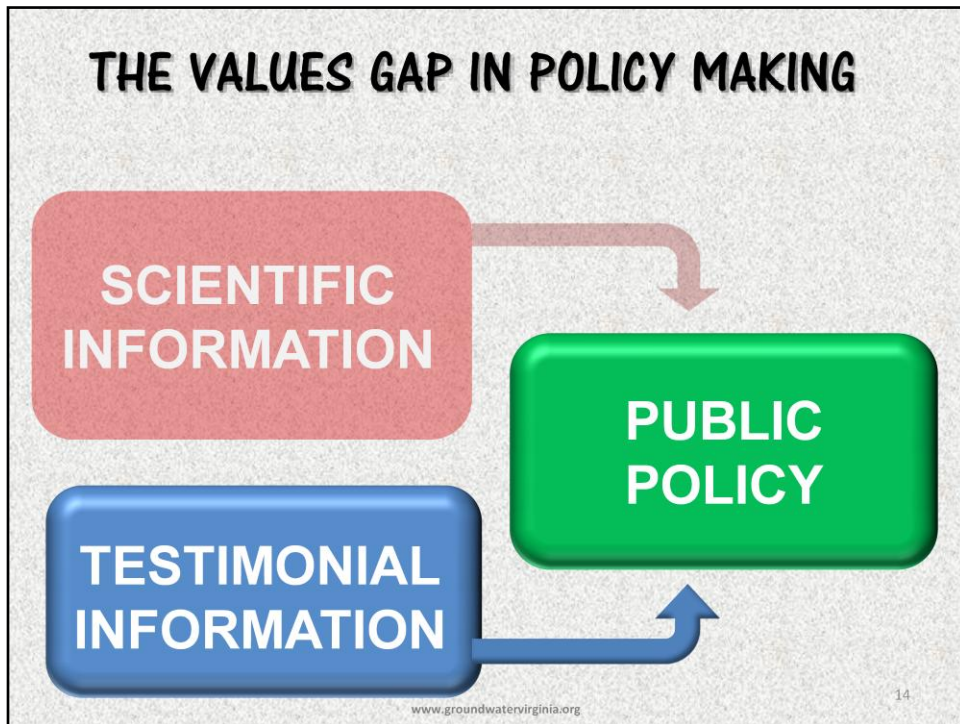
MUCH OF THE PUBLIC DEBATE ABOUT THESE POLITICAL-GEOLOGY CHALLENGES SWIRLS AROUND FIVE VALUE-LADEN ISSUES . WHEREAS ALL OF THESE ARE SURE TO FIRE UP A LOT OF NERVE ENDINGS, THE FIRST FOUR CAN BE OBJECTIVELY ASSESSED. THE FIFTH ONE IS MORE SLIPPERY -- MORE JUDGMENTAL.



THE VALUES GAP IS EVIDENT IN THE KINDS OF BASIC INFORMATION THAT GO INTO PUBLIC POLICY MAKING. PUBLIC POLICIES GOVERNING POLITICAL-GEOLOGY ISSUES TYPICALLY REFLECT THE INPUT OF TWO VERY DIFFERENT KINDS OF INFORMATION, JOINED IN WHAT CAN ONLY BE CALLED A MARRIAGE OF INCONVENIENCE.



SCIENTIFIC INFORMATION IS KNOWLEDGE CREATED ACCORDING TO THE SET OF VALUES THAT I DESCRIBED EARLIER . IT IS OBJECTIVE, EVIDENCE-BASED, AND TESTABLE, AND HAS BEEN SUBJECTED TO PEER REVIEW WITHIN THE SCIENTIFIC COMMUNITY OR ACCEPTED BY CONSENSUS WITHIN THIS COMMUNITY.



TESTIMONIAL (OR TRANSMITTED) INFORMATION IS KNOWLEDGE ACQUIRED NOT FROM A SYSTEMATIC METHODOLOGY BUT FROM COMMUNICATION AMONG HUMAN BEINGS. IT IS COMMONLY SECONDHAND, ANECDOTAL, AND NONEXPERIENTIAL, AND IT CONSISTS OF BELIEFS, MYTHS OR “STORIES” TRUSTED AS AUTHORITATIVE BY A PERSON OR GROUP.

FOR EXAMPLE, IT MAY BE NARRATIVES COMMUNICATED DURING MORNING COFFEE KLATCHS AT THE LOCAL MACDONALDS, BY CABLE TALK SHOWS, NARROW-FOCUS ISSUE WEBSITES AND PUBLICATIONS, OR SIMILAR VENUES.

THE INFORMATION MAY REFLECT EITHER REACTIONARY OR RADICAL VALUES, DEPENDING ON THE IDEOLOGY OF THE HOLDERS.

SCIENTIFIC INFORMATION IN POLICY MAKING

“[Scientists reported] that since 1980, sea-level rise between Cape Hatteras, North Carolina, and Boston, Massachusetts, has accelerated to between 2 and 3.7 millimetres per year.”

Nature (June 27, 2012)

**PUBLIC
POLICY**

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LET’S LOOK AT AN EXAMPLE OF POLICY MAKING THAT ILLUSTRATES THE VALUES GAP. A RECENT SCIENTIFIC STUDY CONCLUDED THAT SEA LEVEL ALONG THE ATLANTIC COAST WAS RISING AT AN ACCELERATING RATE. THE FINDINGS CAME AS LITTLE SURPRISE TO SCIENTISTS.

TESTIMONIAL INFORMATION IN POLICY MAKING

“Science should be based on real hard data, [said one N.C. state senator]. . . Just because there is a group of folk that project the sea-level rise does not mean the sea level will rise.”

Daily Advance [Elizabeth City, NC] (June 26, 2012)

PUBLIC
POLICY

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HOWEVER, THE SCIENTIFIC REPORT WAS GREETED WITH DISBELIEF AND DERISION BY SOME POLICY MAKERS. EVIDENTLY, THIS LEGISLATOR SAW THE SCIENTIFIC REPORT AS JUST ANOTHER IDEOLOGICAL PRONOUNCEMENT, OR JUST MORE PARTISAN PROGRESSIVE TESTIMONY.

TELLINGLY, HE ADDED, “ACCEPTING SUCH DIRE PREDICTIONS COULD HARM PROPERTY VALUES AND TAX REVENUES, AS WELL AS HIKE INSURANCE RATES FOR COASTAL COUNTIES.”

THE VALUES GAP CAN YIELD RECKLESS PUBLIC POLICY

SCIENTIFIC
INFORMATION

“Lawmakers in North Carolina, . . . voted on Tuesday to ignore studies predicting a rapid rise in sea level due to climate change and postpone planning for the consequences.”

Reuters (July 3, 2012)

TESTIMONIAL
INFORMATION

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THE LAWMAKERS CHOSE TO DISMISS THE SCIENTIFIC INFORMATION AND FASHIONED A POLICY THAT DISCOUNTED THE ADVERSE CONSEQUENCES OF RISING SEA LEVEL. SEVERAL DAYS LATER THE N.C. LEGISLATURE PASSED A COMPROMISE BILL TEMPORARILY FORBIDDING STATE AGENCIES FROM BASING ANY LAWS OR PLANS ON EXPONENTIAL EXTRAPOLATIONS, UNTIL A NEW SEA LEVEL STUDY IS COMPLETED.

MEANWHILE, IN VIRGINIA, LAWMAKERS STRUCK ALL MENTION OF THE PHRASE “SEA LEVEL RISE” FROM A BILL THAT FUNDED A RESEARCH PROJECT AND SUBSTITUTED THE TERM “RECURRENT FLOODING.”

Bridging the values gap is hard work because of:

- ✓ Political influence of powerful and well-funded special-interest groups
- ✓ Widespread scientific illiteracy among voters
- ✓ Shallow and flawed science reporting by the news media
- ✓ Insufficient public outreach by geoscientists

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CRAFTING CONSTRUCTIVE PUBLIC POLICY IN RESPONSE TO RISING SEA LEVEL AND OTHER POLITICAL-GEOLOGY CHALLENGES REQUIRES BRIDGING A SIZABLE VALUES GAP. THIS TASK IS HARD WORK BECAUSE IT IS HINDERED BY SOME ROBUST CULTURAL OBSTRUCTIONS, SHOWN HERE.

IT'S ALSO HARD WORK BECAUSE OF TRIBAL ATTITUDES. THAT IS, SOME POLICY MAKERS MAY NOT ACCEPT OR TRUST THE VIEWS OF SCIENTISTS WHO ARE NOT MEMBERS OF THEIR OWN SOCIAL OR CIVIC COMMUNITY AND WHO MAY NOT SHARE THEIR VALUES.

Geoscientists can bridge the values gap by:

- ✓ **Establishing personal relations with policy makers, business leaders, special interest groups, and journalists**
- ✓ **Summarizing and distributing geoscience research findings in plain language**
- ✓ **Conducting geoscience education programs for schools and social organizations**
- ✓ **Explaining and advocating scientific legitimacy at public hearings and other forums**

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IT'S IMPORTANT TO ENHANCE THE ROLE OF GEOSCIENCE VALUES IN THE MAKING OF PUBLIC POLICY. NOT EVERY GEOSCIENTIST HAS TO PARTICIPATE IN BRIDGE BUILDING, BUT SOME MUST IF GOVERNMENT IS TO PROTECT THE PUBLIC HEALTH, SAFETY, AND WELFARE.

