

The Boston Globe

On climate change, there's no going back

By Bud Ris
February 2, 2009

BASED ON the pledges President Obama made during his campaign and his well-credentialed appointees to key policy positions, it is clear that we are in for a whole new level of debate around the issue of climate change. Most likely, that debate will center on how aggressively to tackle climate change through measures such as a nationwide cap and trade program or a nationwide tax on emissions of carbon dioxide.

From our vantage point at the New England Aquarium, focusing on mitigation of carbon emissions is absolutely the right thing to do. But, unfortunately, that will not be enough.

The problem is that once emitted, a molecule of carbon dioxide can remain in the atmosphere for 100 years or more. So even if we get started now on reducing future carbon emissions, some climate change is inevitable. There's too much carbon dioxide already up there, resulting from 150 years or so of emissions. And, once the oceans warm up as they have already started to do, there is no easy way to cool them down. There is no going back, no feasible way to avoid a certain amount of irreversible change. All policies have to start with where we are now, and move aggressively from here.

The effects on the oceans over the next several decades could be profound. Our coral reefs, highly vulnerable to changes in temperature of just a few degrees, and already devastated by pollution and overfishing, will be heavily affected by the warming of the oceans. The range and distribution of many marine species such as lobsters and cod will change, some moving northward if suitable habitat and food can be found, others succumbing to change that they just can't keep up with.

Marine turtles, hardy survivors for millions of years, will be challenged by the flooding of low-lying nesting beaches, or sand temperatures too high for egg incubation. And the already-endangered right whale, threatened by ship strikes and entanglement in fishing gear, may have trouble securing sufficient food, as zooplankton populations shift or decline because of warming and altered wind and water currents.

Humans won't be exempt either. With sea level now expected to rise about 1 to 2 feet by the end of this century, and much of that now irreversible, we will see dramatic changes in our coastline. The 100-year flood zone will move inland and what was previously a 100-year zone will become more like a 30- or 40-year zone. Urban areas will be more vulnerable to flooding, and erosion of shorelines will accelerate along Cape Cod, Nantucket, and Martha's Vineyard. The current estimates of sea-level rise are now believed to be fairly conservative. It could get much worse if portions of Greenland and/or Antarctica melt.

We need to implement policies to help us and the marine world adapt to climate change - not just mitigate it. For example, we can increase coral reef's resilience to climate change by removing other stresses such as pollution or disturbance from fishing gear. Projects like the Aquarium-supported Phoenix Islands marine protected area in the Pacific Ocean are imperative to save pristine coral reefs and the unique fish species they support.

To protect our cities, we will need to revisit current zoning requirements, wetlands permits, and other development regulations along the shoreline. In urban areas such as Boston, it may be possible to bolster waterfront property against the increased risks, but there is plenty of historical evidence to suggest that those measures will not be effective for long expanses of coastline where erosion is already a major challenge.

The only real solution there is to buy time by enacting appropriate land use regulations and setting insurance rates commensurate with the increasing risks. Wise deployment of public infrastructure is key, too.

It is going to take the keen focus and collaboration of government, business, and conservation groups to ensure that we don't just wait for climate change mitigation measures to take hold. We must get started on adaptation now.

Bud Ris is president and chief executive officer of the New England Aquarium, which is co-sponsoring a Climate Change Symposium Feb. 5.

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