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For Boston, the lessons from Venice

By Matthew J. Kiefer and Hubert Murray | December 11, 2008

UPON ARRIVING in Venice on assignment in the 1920s, the writer Robert Benchley cabled his editor: "Streets filled with water. Please advise." As climate change causes sea levels to rise, this lighthearted quip assumes a darker shading.

Boston and Venice are separated - or united - by an ocean. Both are seaports that reincarnated themselves when their shipping and manufacturing economies faltered. Venice has long suffered from storm surges that used to flood St. Mark's Square once every five years. More recently beset with such "acqua alta" 40 times a year, including a severe episode last week, Venice began an ambitious public works project to protect itself from rising sea levels. It may be time for Boston to follow suit.

The global interconnectedness that has caused jobs to migrate worldwide in search of cheaper labor has forced former manufacturing cities to adapt to a post-industrial economy. Boston began this process early by converting a former rail yard into the Prudential Center in the 1960s. Since then, a new economy of tech firms has sprouted in Kendall Square. Research labs, housing, and hotels now fill derelict wharves in Charlestown, East Boston, and South Boston. Several million square feet of new development are envisioned for the South Boston Seaport and for North Point, a 45-acre former rail yard straddling Cambridge, Boston, and Somerville.

Each of these former industrial areas is built on filled land created within the natural harbor. Like Venice, these areas are vulnerable to rising sea levels. Although the science linking greenhouse gas emissions, global warming, and sea-level rise is now established, there is no handy calculus to convert a given level of greenhouse gas emissions to a corresponding amount of sea-level rise.

The human variables are also daunting. How quickly will clean electric power replace fossil-fuel-fired generating plants? Will alternatives to the internal combustion engine take hold before we burn the planet's remaining oil reserves? Will greenhouse gas reductions in developed countries that built their economies on carbon be offset by increases in the developing world, whose citizens want a chance to live the way we do?

These questions are not yet answerable, but since there is so much stored greenhouse gas in the atmosphere already, climate change and its consequences are inevitable. With a 2-foot rise in mean sea levels, within the conservative range predicted by the United Nations Intergovernmental Panel on Climate Change, more frequent storm surges are likely to inundate much of Boston's "made land."

In 1988, Boston architect Antonio DiMambro proposed an ingenious remedy: a flood-control structure from Deer Island to Long Island to close the mouth of Boston Harbor and protect Boston from storm surges and extreme high tides, while allowing navigation and normal tidal flow through a series of gates. An idea that 20 years ago seemed to float somewhere between visionary and delusional now seems prescient.

Rebuilding the country's decaying roads, bridges, and flood-control structures is now the subject of urgent national debate. At a time of extraordinary economic challenges, far-sighted policymakers recognize that one thing more expensive than undertaking new public works projects is not to undertake them. Like organisms, healthy cities must adapt to changes in their environment. Just as we catch our collective breath from finishing the Big Dig, we should be addressing the need to protect the investments countless people have made in the city's future by adapting it to inevitable climate change. This could include raising grade levels, creating reefs to absorb storm surges, or building a hard storm-surge barrier like the one proposed by DiMambro.

This adaptation effort will present unprecedented environmental, engineering, and construction challenges - but, then, so did the Big Dig. While the current worldwide economic slowdown will reduce the pace of greenhouse gas emissions, we don't have time to waste. Venice's flood-control barrier took decades of planning and controversy before construction began. New York City's mid-20th century master builder Robert Moses claimed that major public works projects typically take 40 years from conception to completion. On that timetable, if we started now, we could complete a storm-surge barrier by about 2050 - just-in-time delivery on an urban scale.

Matthew Kiefer, a land use attorney, and Hubert Murray, an architect and planner, organized the recent Mass Impact conferences on cities and climate change. ■

