

Adaptation: An Essential, but Lagging, Part of Global Warming Policy

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What does the Republic of Vanuatu, an island nation in the South Pacific, have in common with the state of California? Whether the former's inundation, brought on by Cyclone Pam in March of this year, was exacerbated by sea-level rise or whether the latter's prolonged drought similarly might be an early harbinger of global warming—each case dashes the illusion that there is time to spare. Even if there were, the long-term benefits of a global greenhouse gas mitigation regime remain an uncertain prospect. In short, a delay in adaptation to unavoidable climatic threats is an unaffordable luxury. Action can no longer be averted on account of eventual mitigation measures.

change." As in California, the nation's leaders have developed a detailed climate adaptation strategy that identifies not only the risks but also options, policies, and plans for action. But in contrast to Vanuatu's clear lack of the economic resources needed to put such plans in place, California's financial ability to confront climatic stress and threats will not hamper its ability to act, as evidenced by the aggressive launch of Governor Brown's water-management reforms.

The dual challenges of mitigation and adaptation were firmly established more than a quarter century ago. In a 1989 essay, Roger Revelle, an eminent oceanography and climate science scholar, underscored in particular the vulnerability of poor agri-

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At the same time, adaptation presents unique challenges, unlike those associated with mitigation. Although Vanuatu and California may share vulnerability to the same underlying climatic phenomenon, the comparison exposes a striking asymmetry. The United Nations Population Fund classifies Vanuatu as "one of the most vulnerable nations to natural hazards," emphasizing that it "faces the challenge of eradicating widespread poverty in the face of climate

cultural economies to climatic stress (in the RFF Press book *Greenhouse Warming: Abatement and Adaptation*). More recently, at RFF's Fourth Hans Landsberg Memorial Lecture in December 2006, Nobel Laureate Thomas Schelling focused still more pointedly on the economic disparity that deprives many developing countries of the resilience and means to address the same climatic threats that face advanced countries. The core challenge, in Schelling's



Ngalueng K. Iatakee, Mayor of Abaiang Island Council, shows the changing landscape of Abaiang, a Kiribati island where severe coastal erosion and saltwater intrusion caused the village of Tebunginako to relocate more than 15 years ago.

2006 reflections, is one of providing financial support to climatically vulnerable poor countries, even recognizing that international aid programs rarely work out as smoothly as hoped: “[W]hat we have to worry about is the developing countries, where a third of the [GDP] may be agricultural. And maybe for half the population, they live on agriculture—many of them subsistence agriculture. . . . And there, I think, is where we look for the most severe impacts of climate change.”

Indeed, there are bound to be circumstances where even the prospect of financial support offers necessary, but far from sufficient, relief from the threat of climate change. Take the case of another Pacific island nation—that of Kiribati, where the highest point (a mere three meters) is already threatened and is below

sea-level peaks likely to materialize long before a global climate protocol may offer the distant prospect of stabilized shoreline conditions. Out-migration of Kiribati’s population could be an obvious, if virtually unprecedented, defensive strategy. But neither have the nation’s 100,000 citizens yet acceded to such a solution, nor have countries with the territorial capacity to absorb such a relatively modest population size shown any willingness to consider accepting them—perhaps because of the tactical temptation to conflate an environmental plight with the unwelcome specter of refugees fleeing political, military, or economic turmoil. Whatever the impediments, they have not stopped Kiribati’s President Tong from actively pursuing the possibility of land purchases on Fiji to resettle his nation’s population.

But it would be unfair to associate the prospects of climate-induced demographic upheavals with just the unique circumstances of small Pacific island states. Therefore, picture the contrasting case of, say, Bangladesh—a poor and still relatively low-emitting developing country of more than 160 million people, often cited for its particular susceptibility to major coastal flooding and attendant loss of life among its sizable coastal population. With Bangladesh

address global warming. Perhaps there is apprehension that doing so would dilute the preventive and priority goal of mitigation. Time, unfortunately, does not offer the luxury of a prolonged failure to recognize the respective demands of both mitigation and adaptation.

Almost surely, the benefits of a successful adaptation strategy will have to materialize well before the efficacy of a mitigation policy takes hold. A carbon tax that comes

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having an overall population density three times higher than India's, relief through inland migration to higher ground is an unrealistic safety valve. Under a global carbon tax regime, the country could see some relief from increasing coastal inundation that a stabilizing climate would confer—but only in a matter of decades. Only at that point might the country benefit disproportionately from greenhouse gas emissions abatement to which the world's leading emitters would be committed. Until then, however, along with whatever foreign assistance it may receive, Bangladesh would almost certainly have to rely predominantly on its own adaptive capacity and financial resources for coastal protection.

Advocates for climate change action are pressing vocally and understandably for the earliest possible enactment of mitigation policies (such as a carbon tax or its effective equivalent). The evident urgency of adaptation measures notwithstanding, it's hard to dispel the thought that such groups—both private and public—may be hesitant to blur policy discourse by injecting adaptation as a vital complementary initiative to

into force, say, by 2020 might trigger some anticipatory behavioral fuel shifts and other changes, but its estimated full effects would lag for many years to come. And even considering the long-term benefits of a mitigation policy, there will inescapably be unanticipated circumstances requiring alternative action; in other words, strategies to build and ensure adaptive capacity will endure as a needed tool of global warming policy. Perhaps even more evident now than in Schelling's perspective of a decade ago will be the continuing financial and equity challenges posed by climate change.

In the context of global warming issues, it might be misplaced to underscore the argument for adaptation almost as emphatically as the imperative to abate emissions. That said, I believe it's fair to characterize adaptation as a seriously lagging and neglected matter of concern—one that, moreover, may continue to pose burdens that even an elusive carbon tax era may not altogether put to rest. ●

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