



## Inside the Institute

# Adapting to Climate Change: Developing a Coordinated International Strategy

Dr. Rosina M. Bierbaum delivers 2009 Pinchot Distinguished Lecture

There are two different futures that face us . . . the path we are on clearly leads to increasingly serious climate change impacts, with potentially catastrophic changes that will both compromise development and threaten living standards. There is another path that leads to a transformed energy system, to improved stewardship of the world's soils and forests, and that can create economic opportunity and reduce global poverty." Thus began Dr. Rosina M. Bierbaum in her Pinchot Distinguished Lecture, given at the Cosmos Club in Washington, DC on February 27, 2009. The honorary Pinchot Distinguished Lecture is hosted annually by the Pinchot Institute.

Bierbaum's lecture entitled *"Avoiding the Unmanageable and Managing the Unavoidable: Evolving Strategies for Adapting to Climate Change"* brought together more than 100 experts from various fields of environmental science and policy to consider climate change responses that incorporate adaptation strategies as well as mitigation and reduction of greenhouse gas emissions. The lecture reflected Bierbaum's two decades of research on climate change at the Congressional Office of Technology Assessment, and as acting director of the White House Office of Science and Technology Policy. Bierbaum currently serves as dean of the School of Natural

Resources and Environment at the University of Michigan, and as co-director of the World Bank's upcoming 2010 World Development Report on Climate Change.

Bierbaum described the current state of knowledge about the expected rate and magnitude climate change, how the effects are likely to vary among different regions of the world, and the types of strategies and investments that will be needed to address the economic, social, and

environmental challenges that lie ahead (see Figure 1). Climate change, she asserted, is not only a matter of temperature, but an amalgam of environmental stresses that will vary in its effects on different ecosystems and populations. It is likely the world's poorest nations will be disproportionately affected due to the vulnerability of developing countries' agro-economic systems and their susceptibility to floods, droughts, fire and pest infestations. Impacts on sea levels, coast-

### Figure 1. Climate Change: What we know...

- Past is not prologue . . . and the pace of change is quickening
  - Infrastructure, natural resource management, and planning based on the last 100 years will be wrong
  - Design features of infrastructure and tolerances of species will be exceeded
- Committed to further climate changes
  - Adaptation *is* occurring, even if unplanned
  - An .8 degree Celsius increase has been observed so far, and there is another half degree occurring inevitably
- Degree of warming matters
  - Rates of change and degrees of change significant
  - Mitigation makes a difference
- It's not just the averages that matter
  - Important to consider regional and local variances
  - Seasonal changes
  - Extreme events
- Need a Portfolio Approach
  - Adaptation and Mitigation
  - Consider interlinkages
- Adaptive Management is needed
  - All sectors and all regions simultaneously
  - Learn and adjust
- Investment is not commensurate with the urgency of the problem
  - Need integrative regional assessments involving stakeholders
  - Need prioritization of needs, not laundry lists
  - Need transformational not evolutionary change



Dr. Rosina Bierbaum has expanded the mission of the School of Natural Resources and Environment at the University of Michigan to include climate change by recruiting new faculty, developing an academic link between business, engineering, and natural resources, and tripling research activity. Recently, Dr. Bierbaum is instilling a necessary sense of urgency on the part of the world's governments to take action in the face of climate change impacts through her contributions to reports with Sigma Xi and the UN Foundation. In addition, she is focusing on climate change adaptation strategies with the World Bank. While upholding the highest standards of independence, non-partisan objectivity, and scientific integrity, Dr. Bierbaum has been able to successfully "speak truth to power" at the highest levels of government and make a difference worldwide.



Dr. Rosina Bierbaum enjoying the reception with Sally Collins, Director of the Office of Ecosystem Services and Markets, and Dr. Ross Gorte, Pinchot board member and Senior Policy Analyst for the Congressional Research Service of the Library of Congress.

### Figure 2. AAA Solutions for Mitigation

**Adequate**—to protect from run-away climate change


**Achievable**—technical feasibility and societal acceptance

**Acceptable**—efficient, cost-effective and equitable

line infrastructure, ecosystem integrity, disease patterns, extreme weather conditions, and the flow of commerce will pose challenges for all nations, but developing nations' financial resources will limit their ability to prepare for these effects, which could lead to large-scale population dislocations and economic disruptions.

Bierbaum cited four critical areas in which further research and analysis is needed to provide information essential to an effective climate change strategy: (1) environmental and economic impacts of simultaneous multiple stresses, (2) regional assessments of varying climate change effects, (3) actions needed to prepare for extreme events and their consequences, and (4) the intersection of mitigation and adaptation in global and national climate change strategies.

To address these research needs, significant additional investment are needed by the US, other developed and developing nations, and international funding institutions such as the World Bank. Bierbaum estimated \$100 billion to \$500 billion is needed yearly to implement mitigation and adaptation efforts and successfully provide assistance in the most vulnerable countries. Closer international coordination and a restructuring of research efforts is needed to adequately address both the scientific issues and the societal issues associated with climate change adaptation and mitigation.

"It is absolutely clear that rich countries have to take the lead, but everybody has a stake in solving the climate crisis . . . we are talking about being climate-smart, not just passively climate-resilient" Bierbaum stated when discussing ways to address climate challenges (see Figure 2). With the limited funding available, Bierbaum explained that the natural resource community must invest in "win-win-win options," programs that reduce deforestation and increase renewable energy production as part of a broad and comprehensive climate strategy. 

*The legacy of Gifford Pinchot—both his place in conservation history and his respect for the principled and provocative speech and prose—is the premise for the Pinchot Distinguished Lecture Series. Through this series, the Pinchot Institute seeks to advance the understanding and current thinking about contemporary issues in natural resource conservation.*

*For more information about this and other Pinchot Distinguished Lectures, please go to [www.pinchot.org](http://www.pinchot.org) or contact Star Dodd at [sdodd@pinchot.org](mailto:sdodd@pinchot.org).*

