

CHANCELLOR'S MESSAGE

FROM JAY A. PERMAN



The USM and Our Sustainable Future

Last summer was the [hottest on record](#), 0.41 degrees Fahrenheit warmer than any other summer. When July 2023 became the hottest month recorded, it eclipsed the five hottest Julys the world has ever experienced—all of them occurring in the last five years. The heat wasn't the only environmental catastrophe: Its companions—out-of-control forest and grassland fires, dangerous air quality, contaminated drinking water, epic floods and droughts—dominated U.S. headlines.

These effects of climate change are felt deeply in a coastal state like Maryland, influencing storm patterns and severity, inducing sea level rise, and advancing the spread of disease. In matters of the environment, global is local.

It's clear that we're at an inflection point, that climate change and environmental degradation are existential threats to our health, to our safety, to our prosperity and our lives. The USM has a stake in solving this crisis precisely because *Maryland's* stake is so high.

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Walking the Walk

In policy, Maryland is meeting this moment with the Climate Solutions Now Act (2022), one of the most aggressive climate laws in the country. By 2031, the legislation mandates a 60 percent reduction in greenhouse gas (GHG) emissions over 2006 levels, and net-zero GHG emissions by 2045. A [report](#) last year by the Center for Global Sustainability at the University of Maryland, College Park (UMCP) shows how those goals can be achieved.

But long before the climate bill was passed, the USM had launched a sustainability initiative that would dovetail with the state's goals. In 2007, every USM leader signed onto the [Presidents' Climate Leadership Commitments](#), agreeing to [publicly report](#) progress toward carbon neutrality. Since then, the System has cut GHG emissions by 865,000+ metric tons—an aggregate net reduction of 52 percent.

All of our universities are converting their fleets to zero-emission vehicles, and every building built on every USM campus in the last 15 years has an energy performance rating of LEED Silver or better. Our universities are working toward buying 100 percent of their electricity from renewable sources, and, in fact, UMCP and the University of Maryland, Baltimore have already hit that goal.

This work is important: The University System has a significant footprint across Maryland. With hundreds of buildings and thousands of acres among its universities, labs, and centers, the USM provides a testbed for mitigation and adaptation strategies that can shape the response of local governments, businesses, and citizens.



A Vision of Sustainability

But the System's deeper potential to lead through our environmental crisis is rooted in our three-part mission: education, research, and service. That means training an environmental workforce equal to the threats we face; advancing the science that illuminates those threats and neutralizes them; and applying our work to protect the people and communities suffering sizeable harm.

Sustainability is a key theme running through the System's [Vision 2030](#). It's called out in our goals

targeting student learning, research excellence, and community engagement. And we go big—eyeing leadership that shapes national and international policy and practice for a more sustainable future.

That leadership will come not only from the depth of our expertise but from its breadth, spanning dozens of disciplines at universities across the USM: agriculture, geography, ecology, microbiology, biotechnology, medicine, law, and policy. As is so often the case, our strength is our *System*—the expansiveness of the knowledge we produce and our collective commitment to applying it with impact.



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What Sets Us Apart

But at the USM, we have something *else* going for us—something unique—that can position us for outsized influence. The University of Maryland Center for Environmental Science (UMCES) is one of only five environment-focused universities that report research expenditures to the NSF, and one of just three focused on marine and ocean ecosystems.

UMCES's mission is codified in law: To develop and apply predictive ecology to improve and preserve Maryland's physical environment. Its annual [Chesapeake Bay Report Card](#), for instance, has become the go-to resource for state and federal lawmakers developing policy to protect the bay and its watershed.

UMCES's reputation as an honest broker of environmental information strengthens its role in advising Maryland leaders and agencies on policy development and implementation, and in assessing the outcomes of that work. It builds the trust needed for effective stakeholder engagement, allowing UMCES to partner with communities and co-create priorities for action on specific environmental threats.



Sustainability is a key theme in the USM's strategic plan, guiding priorities in education, research, and service. The plan calls for national and global leadership in environmental policy and practice.

But UMCES's impact is hardly contained to Maryland. It's a global leader in advancing a scientific basis for understanding our environment, where faculty and students apply the knowledge gained by studying Maryland's ecosystems and climate conditions to other settings around the world.

UMCES's new [Chesapeake Global Collaboratory](#) promises to revolutionize this work, employing advanced data science and cyberinfrastructure to develop environmental solutions shaped by more people, richer information, better technology, and broader engagement. As UMCES convenes the entire University System in work that centers environmental health and resiliency, this collaboratory will open up more opportunities for a truly Systemwide approach to solutions-driven research, education, and service.



U.S. universities award 59,000 bachelor's degrees in all agriculture and environment-related majors combined, not enough to meet the crisis in front of us.

A Problem in Need of Solvers

The second item in that tri-part mission—education—warrants a deeper look. Because, as it stands, the country isn't producing enough environmental professionals to meet the crisis in front of us. In 2021, U.S. universities awarded 7,400 bachelor's degrees in environmental science. All [agriculture and environment-related majors](#) combined reached 59,000. (Compare that to undergraduate business degrees, which numbered 391,000.) Meanwhile, the job market for environmental scientists is projected to grow by 6 percent over the next decade, double the growth for all jobs.

And while most USM universities offer highly ranked programs in the environment, and while these programs are growing, that doesn't actually solve the supply-demand problem.

We need to expose learners to environmental education and research long before they reach one of our universities. Pipelines don't work if they don't start early. We must engage elementary and secondary students, get them interested in the field, invested in the outcomes, and prepared for the work. We must build a continuum of education and experiences that bring students into the USM and then stack opportunities—for careers and for graduate education—that cultivate the leaders we need.

The Power of Our Partnerships

To get a sense of the System's power and prominence in environmental science, it's illustrative to consider our partnerships—to look at who relies on our infrastructure, expertise, and people to advance their mission-critical work.

NOAA, for instance, is the country's premier agency on climate science. Following are just a few of our partnerships with NOAA—partnerships that center the USM in: 1) predicting and preparing for environmental impact; and 2) training the next generation of diverse scientists who will accelerate our progress.

The **University of Maryland, College Park** hosts NOAA's Cooperative Institute for Satellite Earth System Studies, illuminating how Earth's atmosphere, ocean, land, and biosphere interact with each other and with human activity. The **University of Maryland Eastern Shore** leads NOAA's Cooperative Center for Living Marine Resources, training underrepresented students for careers that support the sustainable harvest and conservation of marine life.

UMBC partners in NOAA's Center for Earth System Sciences and Remote Sensing Technologies, preparing a diverse workforce to assess our changing climate system and mitigate its impacts on human life and habitats. **UMCES** is part of NOAA's Cooperative Institute for the North Atlantic Region, conducting the research that shapes how we sustainably—and beneficially—manage the continental shelf ecosystem of the U.S. Northeast coast.

We must open up environmental science and solutions to those historically excluded. Because our endangered environment doesn't endanger all of us equally.



Meeting the Moment

Don't get me wrong: Our universities *are* doing all of these things. But as we look to fulfill our Vision 2030 goal—national and international leadership in climate and environmental science—we must think of ways we can come together as a System to scale what we're doing and amplify our impact.

We have the chance right now to envision what our leadership looks like. How to leverage disciplines that intersect with the environment—data science, advanced computing, cybersecurity—to address problems that have always been multidimensional but that never before benefited from the technologies we now have at our fingertips. How we exploit relationships with federal and state agencies, with NGOs, given that so many of our strengths overlap with their priorities: climate change and mitigation, biodiversity and ecosystem conservation, water resources management.

How we grow our corps of environmental majors, sufficient to meet the moment. How we strengthen partnerships with private industry, and address training needs in a holistic way. How we diversify the people contributing to our environmental dialogue, listen to their voices, and open up environmental science and solutions to those historically excluded. Because we know that our endangered environment doesn't endanger all of us equally; that vulnerable communities, marginalized communities, bear a far greater burden.

Our leadership demands no less. Our planet deserves ever more.



www.usmd.edu | chancellor@usmd.edu