

NC STATE

Natural Resources

STRATEGIC PLAN

2016-2020



Strategic Plan

College of Natural Resources 2016-2020

At NC State's College of Natural Resources, we take a comprehensive approach to teaching, research and engagement, exploring the many ways that people's physical, economic and social needs can be met while protecting our planet's natural resources for future generations. **Nurturing the environment and engineering sustainable products go hand-in-hand with helping communities and enterprises thrive.**

For almost a century, the college has served vital industries in North Carolina — including the state's largest manufacturing sector, forest and wood products; its largest service sector, tourism; and more than half a million forest landowners. Together, these industries provide more than half a million jobs and generate more than \$50 billion in annual economic impact.

Building on core strengths in paper science and engineering, forest management and conservation, and park planning and tourism management,

our mission is to provide solutions to the challenges of natural resources management, social and ecological sustainability, and human health and well-being through our teaching, research and engagement. We aim to be among the very best in the world.

This strategic plan is our best thinking about how we achieve that aim. The first part, "Achieving Excellence in Three Interdisciplinary Themes," describes the new focal areas that leverage our collective strengths and address grand challenges in natural resources. The second part, "Programmatic Goals and Objectives," presents more specific goals and objectives to enhance student success and satisfaction; build a world-class portfolio of disciplinary and interdisciplinary research and engagement; continue to enhance diversity across the college; and improve our operations — all so we can have a greater impact in the world.



Achieving Excellence in Interdisciplinary Themes



Theme One **Sustainability Solutions**

At its core, sustainability refers to a way of living that ensures we leave our environment as good or better than we found it, so future generations have the same opportunities that we have today. Achieving sustainability requires a commitment to doing things differently — to thinking holistically and evaluating the choices and trade-offs associated with alternative pathways to the future. Innovation can improve industry competitiveness and guide development in ways that enhance livelihoods and reduce environmental burdens. **Extraordinary science can provide new ways to restore healthy ecosystems and build resilience in a changing world.**

The college is bringing together teams of engineers, modelers, economists, and social and natural scientists who are developing and applying new methods for visualizing sustainability solutions. For example, chemists, engineers and modelers are working with leading sustainable paper producers to turn pulping by-products into value-added and sustainable new biomaterials, diverting them from the waste stream.

In another example, our geospatial analysts, ecologists, economists and other social scientists are developing new approaches to sustainable management of forested ecosystems where wood production, wildlife diversity, carbon storage, water management, food production, recreation and other goals can all be considered and accommodated, with market-based approaches to achieving environmental goals.

By expanding and building new interdisciplinary and collaborative teaching, research and engagement programs around the theme of sustainability, our college will expedite the development of practical approaches for quantifying, visualizing and analyzing alternative scenarios for a more sustainable future. With our partners, **we will train a new generation of sustainability leaders and professionals that can bring real-world solutions to sustainability challenges, helping to protect our natural resources, keeping businesses profitable, and contributing to economic growth in North Carolina and the world.**



Theme Two **Land and Water**

Freshwater supply and management is likely the most pressing natural resource issue of the 21st century. Clean and affordable drinking water is a basic human right, but as much as 80 percent of the world's population does not have access to sufficient quantity and quality of water to support their good health or community development.

Water is the ultimate renewable resource, cycling continuously among the atmosphere, land, rivers, lakes, groundwater reservoirs and oceans. Because most of the world's usable freshwater falls first on land, water management is intimately and inextricably tied to land management. **Our college has an extraordinary track record in teaching, research and community engagement around sustainable land management, and thus we are uniquely positioned to lead a program focused on water security for the future.**

Adequate water quantity and quality is also vital for healthy ecosystems and the biodiversity they support. People have a unique connection to water, and sustainable tourism thrives in communities where lakes, streams, rivers and estuaries are healthy and resilient.

By establishing a **Land-Water Synthesis Center** to bring a landscape perspective to water resource issues and forming interdisciplinary teams across the NC State campus and beyond, we will focus new energy on the challenges of water security. Working across political, societal and economic boundaries, **we will educate new integrated water resource managers and develop holistic solutions to the challenges of freshwater supply and management.**



Theme Three **Urban Ecosystems**

Urban areas in North Carolina, the Southeast and the world are expanding as the human population continues to grow, putting enormous pressures on the wildland-urban interface. Here the built environment and the natural environment can become separated, with significant implications for both.

The fragmentation of natural landscapes significantly elevates the risks of wildfire as well as polluted air and water. It can increase problems with pests and plant diseases and lower resiliency to extreme weather events like floods and droughts. In highly urban environments, people are less connected to the natural world, which has been linked to increasing psychological stress and even greater incidences of preventable chronic diseases like obesity and diabetes.

Our college is actively developing partnerships to help guide urban development along a more sustainable path. For example, our faculty are exploring how cities might provide more opportunities for healthy living, mobility, and connection to the natural world through innovative park design, greenways, and new approaches to building design. Other efforts are focused on reconnecting disenfranchised populations with the environment and reducing the legacy of environmental injustices.

The challenges of wildfire are not only a problem for the western states, and the College of Natural Resources leads research and engagement efforts around wildfire in the southeastern US. Our natural and social scientists are using modeling to examine the spatial distribution of fire risk and finding ways to manage and use fire to protect people and restore the healthy natural habitats.

By building new transdisciplinary collaborations across our departments and the NC State campus, **the college's research and engagement in this thematic area will help address the challenges of urban communities and the wildland-urban interface** providing practical solutions that improve urban ecosystem services and support resilient, just and healthy community development and environmental stewardship.

To tackle the issues addressed in the three thematic areas, we will need significant new investments.

Our priorities are:

- > Fund and establish one named distinguished professorship in each of our three priority areas.
- > Fund and recruit 12-15 new Ph.D. students to conduct interdisciplinary research in our three priority areas.
- > Create synthesis centers that bring together interdisciplinary expertise to find solutions to natural resource challenges in sustainability, land and water, and urban ecosystems.

Programmatic Goals and Objectives

Goal One Enhance student success through educational innovation

Student success requires a combination of challenging academic training and a supportive environment for individual personal and professional growth. **The cornerstone in all of our academic programs is engaged learning.** Our students learn not just in the classroom, but also in state-of-the-art research laboratories and in the field through regular trips to nearby Schenck Forest, at summer camp at Hill Forest, and in many other locations around the state. They participate in internships, cooperative work rotations with industry, study abroad, and research projects with faculty. **All students leave career-ready with discipline-specific academic knowledge, well-developed problem-solving skills, and the ability to both lead and serve.**

To continue to ensure an academic environment where students thrive, we will:

- > Enhance undergraduate academic programs by emphasizing interdisciplinary opportunities for collaboration and engaged learning across curricula.
- > Enhance graduate programs by creating new opportunities that emphasize cross-campus collaboration.
- > Enhance mentoring and advising of undergraduate students across the college, and create co-curricular programs designed to improve student outcomes.

Goal Two Enhance disciplinary and interdisciplinary research and scholarship in areas of core strength

Natural resources programs are by their nature interdisciplinary, requiring a mix of natural, social, physical, biological and applied science as well as technical and planning expertise. **Our objective is to bring diverse disciplines together in successful partnerships and to grow the depth and breadth of these collaborations to address ever more complex scientific, social and industry challenges.**

We envision a larger research enterprise that builds on existing strengths and expands our portfolio of both disciplinary and interdisciplinary research with a particular focus on our three thematic areas. We will continue to leverage substantive cross-campus collaborations, our growing participation in the Chancellor's Faculty Excellence program, our involvement in the U.S. Department of Interior's Climate Science Center, and other opportunities.

To build on our current strengths and expand into new natural resource frontiers, the college will:

- > Enhance research and scholarship capacity in areas of core strength.
- > Enhance interdisciplinary collaboration to build on faculty strengths, interests and emerging areas of societal need.
- > Enhance infrastructural capacity for research and scholarship.

Goal Three Cultivate excellence and enhance diversity among our faculty, staff and students

NC State University and the College of Natural Resources strive to ensure a campus environment where all members of our community feel welcomed, supported and valued. In our increasingly connected and diverse society, the success of our faculty, staff and students will be directly related to how well each person is able to build strong relationships with others who may not be like them. **The creativity and unique perspective of all people is critical to excellence in teaching, research and outreach, as well as great innovation.**

Although the college has made good strides diversifying our faculty, staff and student body, our community does not yet reflect the full diversity of North Carolina or the nation. This goal underscores our commitment to work aggressively toward that full diversity.

We are committed to preparing our students to live and work in a diverse and global society, and to helping all of our faculty, staff and students to be culturally competent and to understand the links between environment, social justice and the natural resource professions.

To create an environment of active inclusion and engagement, we will:

- > Develop, implement and continuously improve recruitment and retention plans to attract and retain diverse faculty and staff.
- > Enhance efforts to recruit and support a student population that reflects the demographic diversity of our state.
- > Integrate diverse perspectives and cultural understanding across the college.

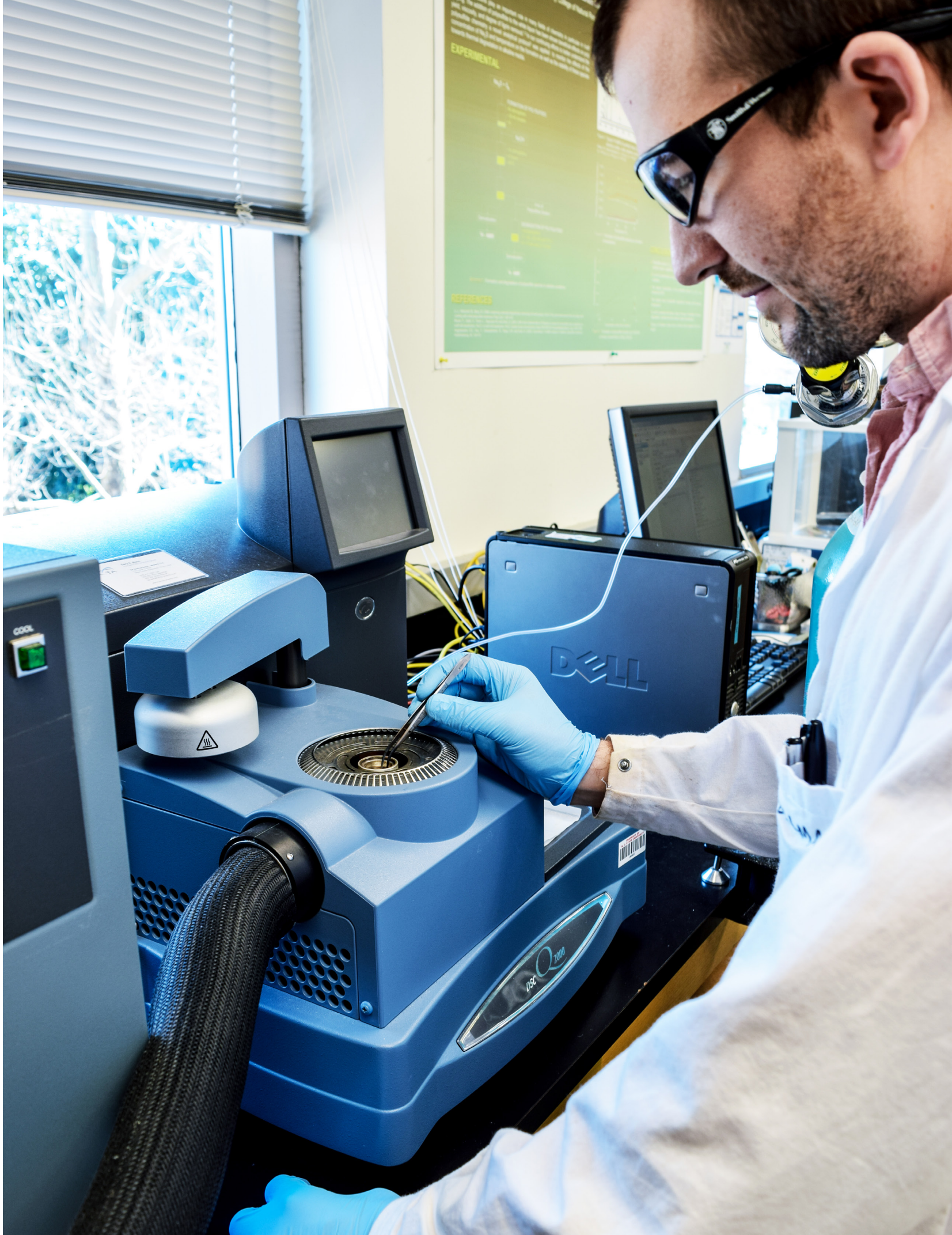
Goal Four Strengthen and enhance infrastructural support and organizational excellence across the college

For the college to achieve its ambitious academic, research, scholarship and engagement goals, **we must have robust and efficient infrastructure systems and facilities that can support current and new endeavors.** Currently, we lack the space we need for our academic and research programs – and both our enrollment and research and engagement portfolios are growing. Our business, financial, human resource and research administration services could be improved by finding efficiencies in structure and process.

During the last two years, the college has recreated its Advancement office with a focus on strong communications, major gift fundraising, alumni and donor relations. We are developing and supporting a Natural Resources Foundation Board that can serve as a critical sounding board and external advocate for the college. A new Executive Director of Forest Assets is bringing best practices and coordination to all forest management activities, enhancing their value to the college.

To ensure we grow and thrive as a college and efficiently provide necessary services, we will:

- > Develop and implement a long-term comprehensive space plan for the college.
- > Clarify roles and responsibilities of business operations staff and provide proactive service to all parts of the college.
- > Provide budget transparency and accountability by regularly sharing budget information.
- > Implement a comprehensive and integrated communications plan that enhances the college's reputation and improves our effectiveness.
- > Plan and implement a college advancement effort that significantly enhances external relations.





Goal Five Foster local and global partnerships that create positive change and contribute to ecological and socioeconomic sustainability

As part of our commitment to NC State's land-grant mission, the College of Natural Resources maintains a broad spectrum of external constituencies. We continually work to ensure that our extension and engagement programs are highly valued by partners in government, private and non-profit sectors.

The college's many partnerships keep our academic programs strong; offer real-world internships, co-op opportunities and future employment to our students; and ensure that our research is relevant and shared with the stakeholders who can use it.

All faculty members are encouraged to actively pursue opportunities to use their professional insights to solve real-world problems in North Carolina communities. Examples of the synergistic impacts of applied research and teaching directed at specific industry and community problems include market-based conservation initiatives with the military and other partners, value-added

management on marginal lands such as municipal waste application sites, evaluation of payment programs for ecosystem services, and physical activity and community wellbeing initiatives designed to enhance public health.

To fulfill our commitment to the land-grant mission of NC State and support local and global communities, we will:

- > Increase opportunities for faculty, staff and students to work with local partners on applied problems.
- > Strengthen and expand our partnerships with the Cooperative Extension Service System and other state partners.
- > Facilitate, develop and enhance global partnerships that build the reputation of the college and support teaching, research and engagement priorities.
- > Enhance college capacity for translational research and engagement with local and global partners.

The go-to place for natural resource solutions.

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