

Identifying Pathways toward a Carbon Neutral, Climate Resilient Rutgers

Robert Kopp and Kevin Lyons

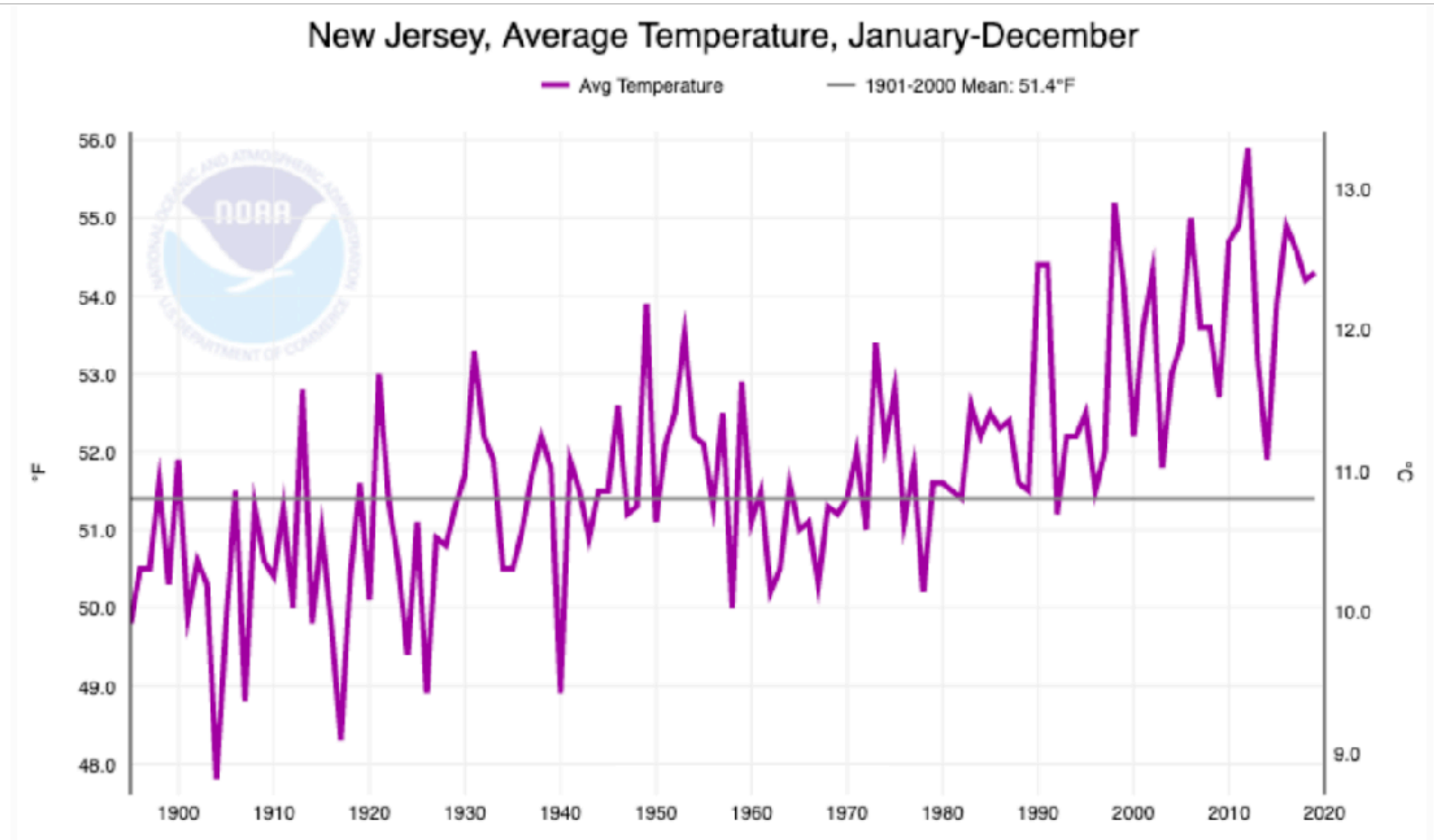
President's Task Force on Carbon Neutrality and Climate Resilience

Pre-Planning Faculty Task Force Membership

- **Robert Kopp**, Co-Chair, School of Arts and Sciences, Rutgers-New Brunswick
- **Kevin Lyons**, Co-Chair, Rutgers Business School, Rutgers-Newark and New Brunswick
- **Clint Andrews**, Bloustein School of Planning and Public Policy, Rutgers-New Brunswick
- **Elizabeth Demaray**, Camden College of Arts and Sciences, Rutgers-Camden
- **Panos Georgopoulos**, School of Public Health, Rutgers Biomedical Health Sciences
- **Robin Leichenko**, School of Arts and Sciences, Rutgers-New Brunswick
- **Xenia Morin**, School of Environmental and Biological Sciences, Rutgers-New Brunswick
- **Robert Noland**, Bloustein School of Planning and Public Policy, Rutgers-New Brunswick
- **Ashaki Rouff**, School of Arts and Sciences-Newark, Rutgers-Newark
- **Rachael Shwom**, School of Environmental and Biological Sciences, Rutgers-New Brunswick
- **Carl Van Horn**, Bloustein School of Planning and Public Policy, Rutgers-New Brunswick
- **Roger Wang**, School of Engineering, Rutgers-New Brunswick

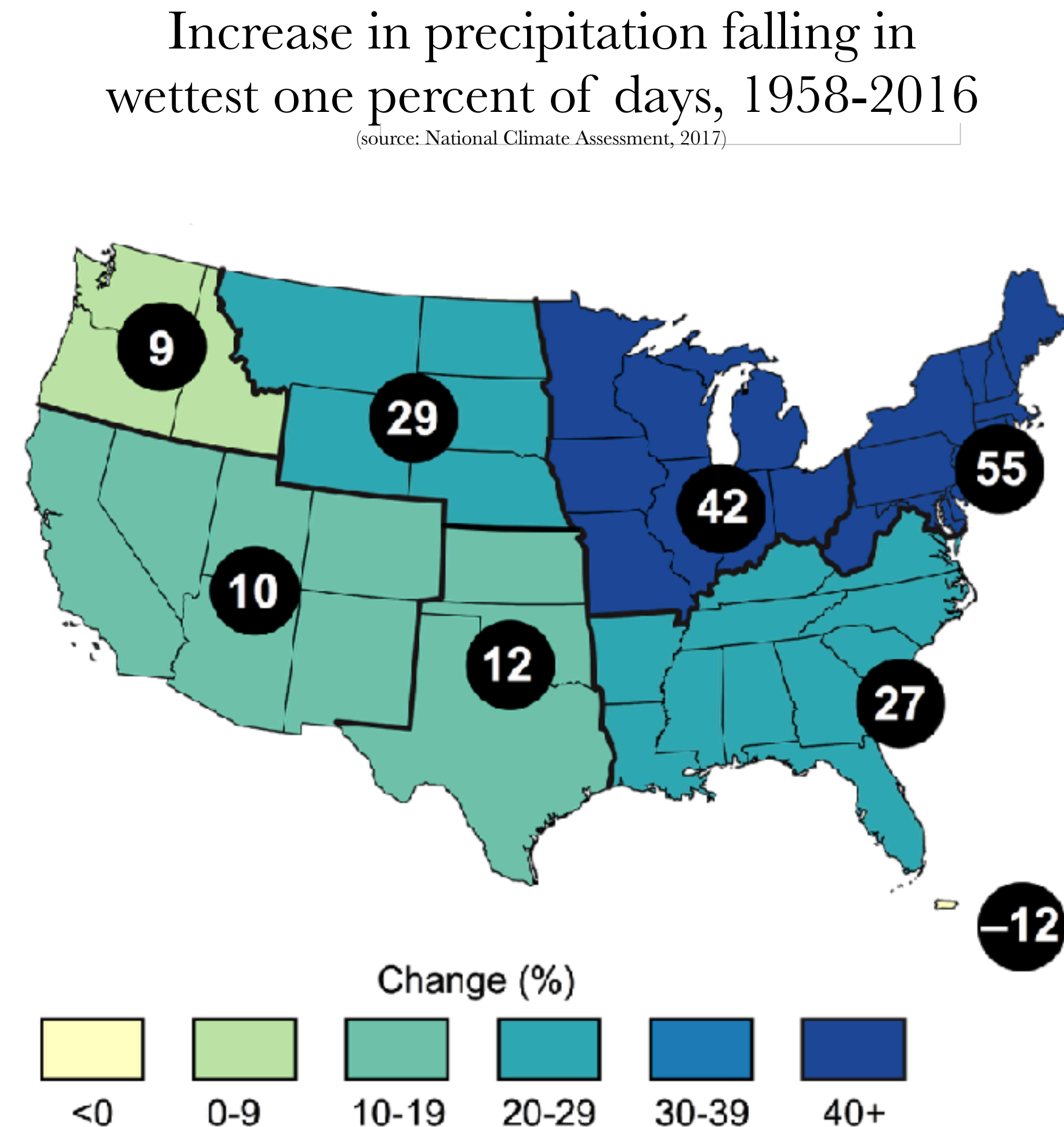
**Climate change
isn't an issue for the
distance future – it's
already affecting
people throughout
the world, including
here in New Jersey.**

Climate change isn't an issue for the distance future – it's already affecting people throughout the world, including here in New Jersey.



New Jersey has warmed by about 4°F since the late nineteenth century.

Climate change isn't an issue for the distance future – it's already affecting people throughout the world, including here in New Jersey.



Rainfall is become more intense across the contiguous United States.

Climate change isn't an issue for the distance future – it's already affecting people throughout the world, including here in New Jersey.

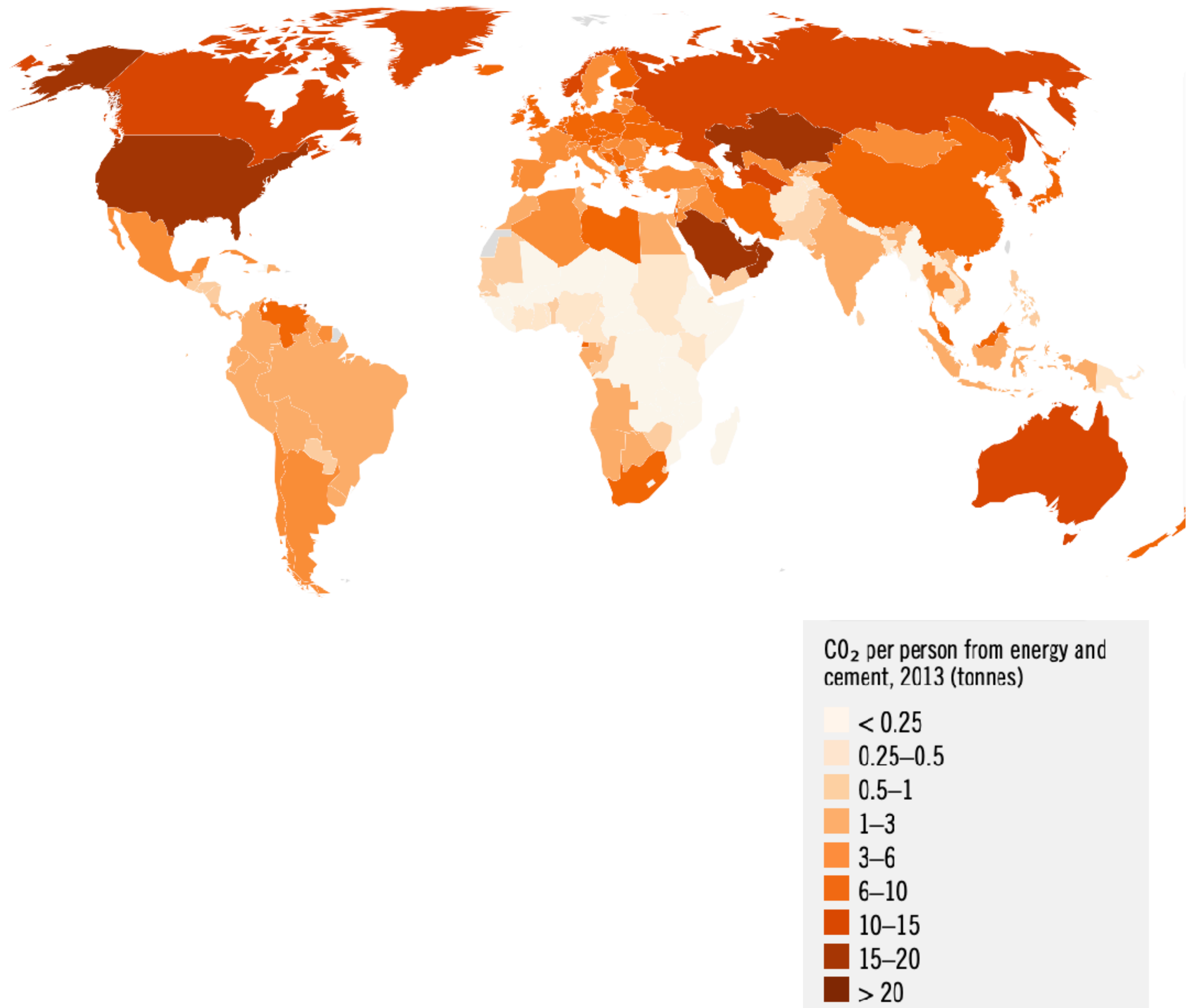


Sea-level rise associated with global warming is now responsible for about 70% of tidal floods along the Shore.

To stabilize global climate, we net to bring net human-caused carbon dioxide emissions to zero, and sharply reduce emissions of other greenhouse gases.

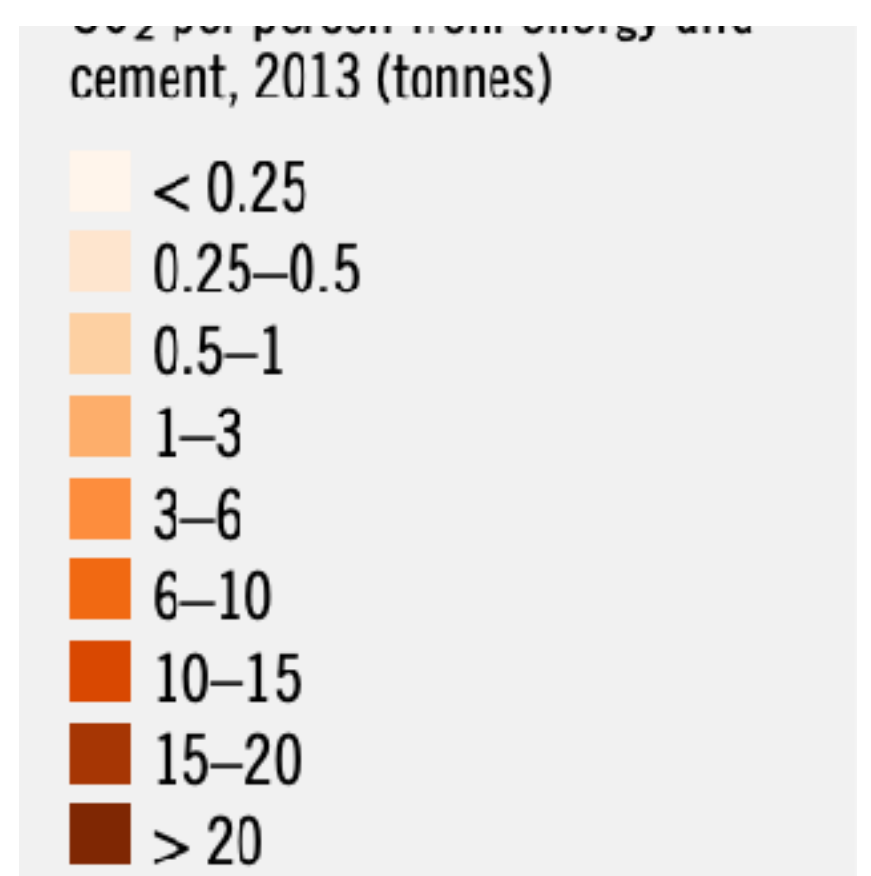
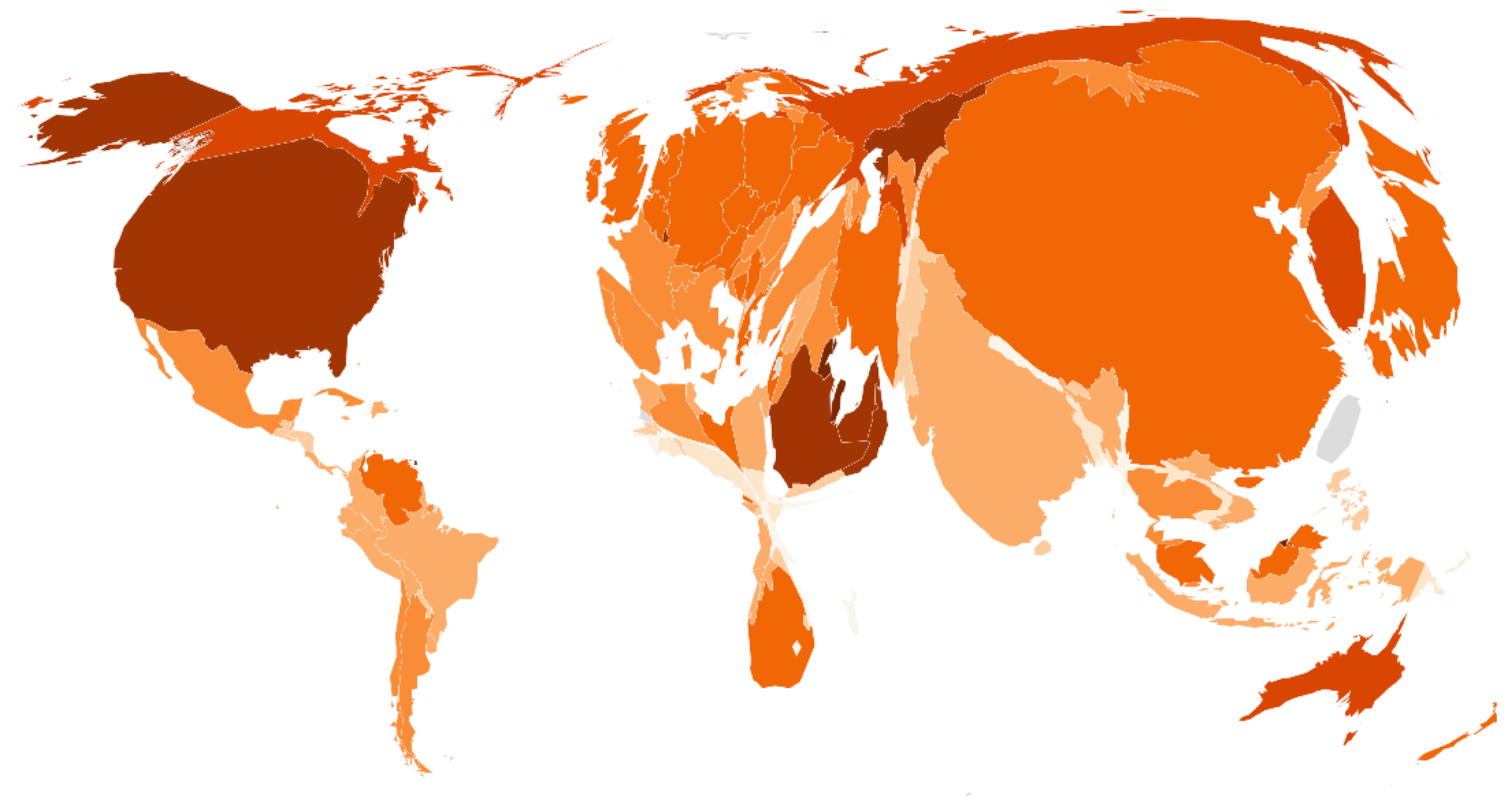
To stabilize global climate, we net to bring net human-caused carbon dioxide emissions to zero, and sharply reduce emissions of other greenhouse gases.

This is a global challenge.

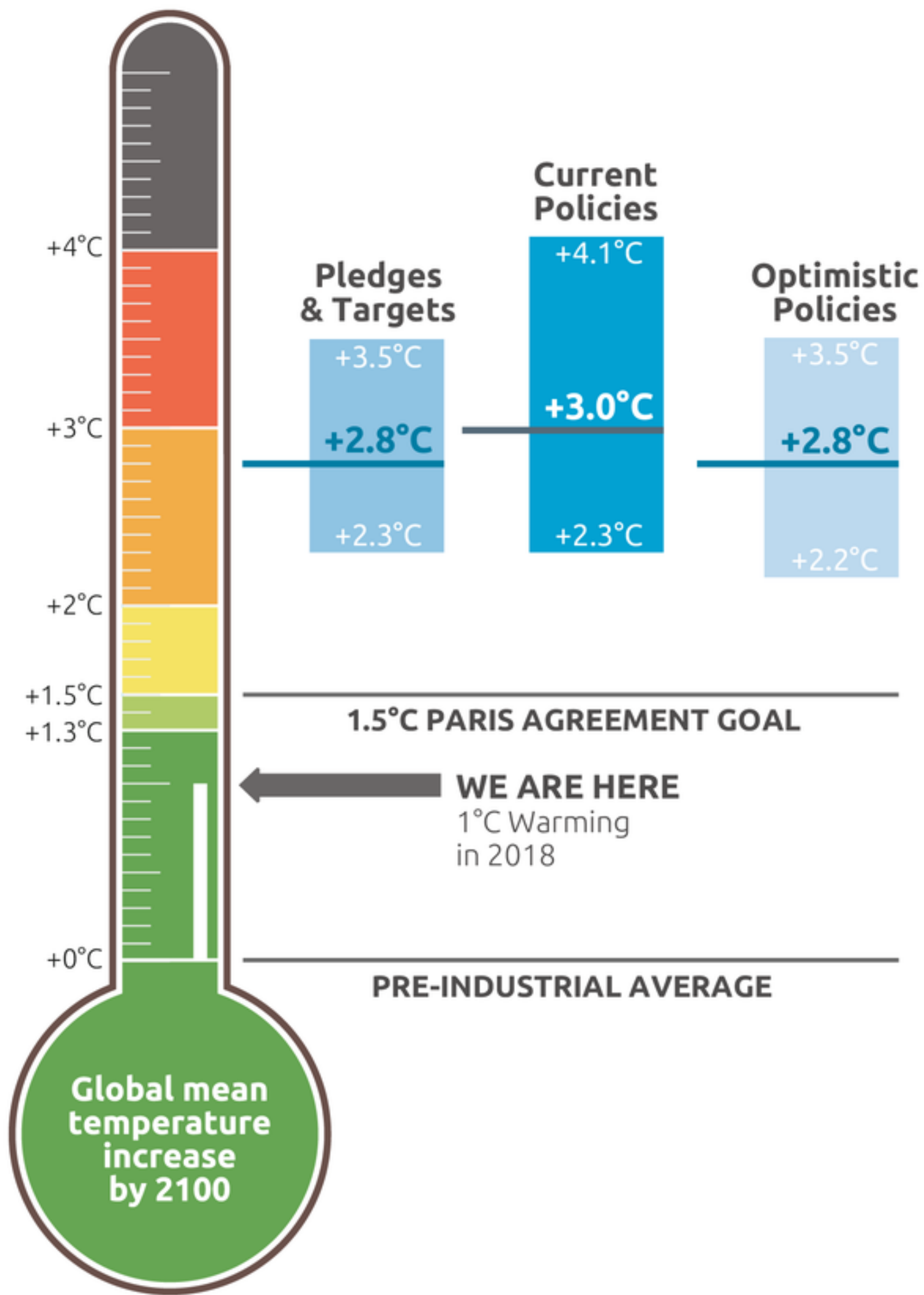


To stabilize global climate, we net to bring net human-caused carbon dioxide emissions to zero, and sharply reduce emissions of other greenhouse gases.

This is a global challenge —
and we at Rutgers need to play our part.



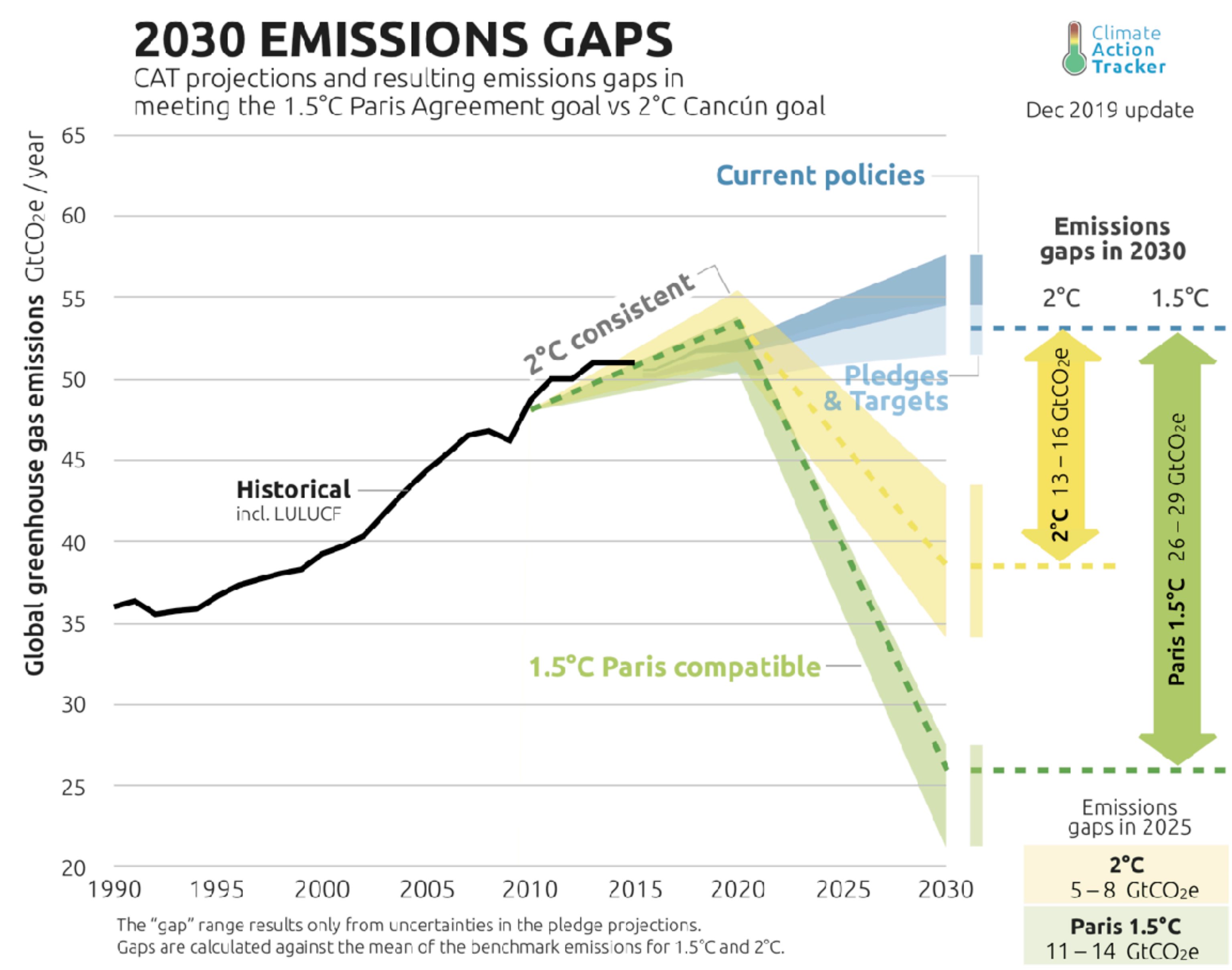
The faster
humanity gets our
carbon dioxide
emissions to zero,
the less the climate
change we have to
deal with.



CAT warming
projections
**Global temperature
increase by 2100**

December 2019 Update

The faster
humanity gets our
carbon dioxide
emissions to zero,
the less the climate
change we have to
deal with.



**Even in a world
with a stabilized
climate, we still
have to manage the
risks we don't
avoid.**

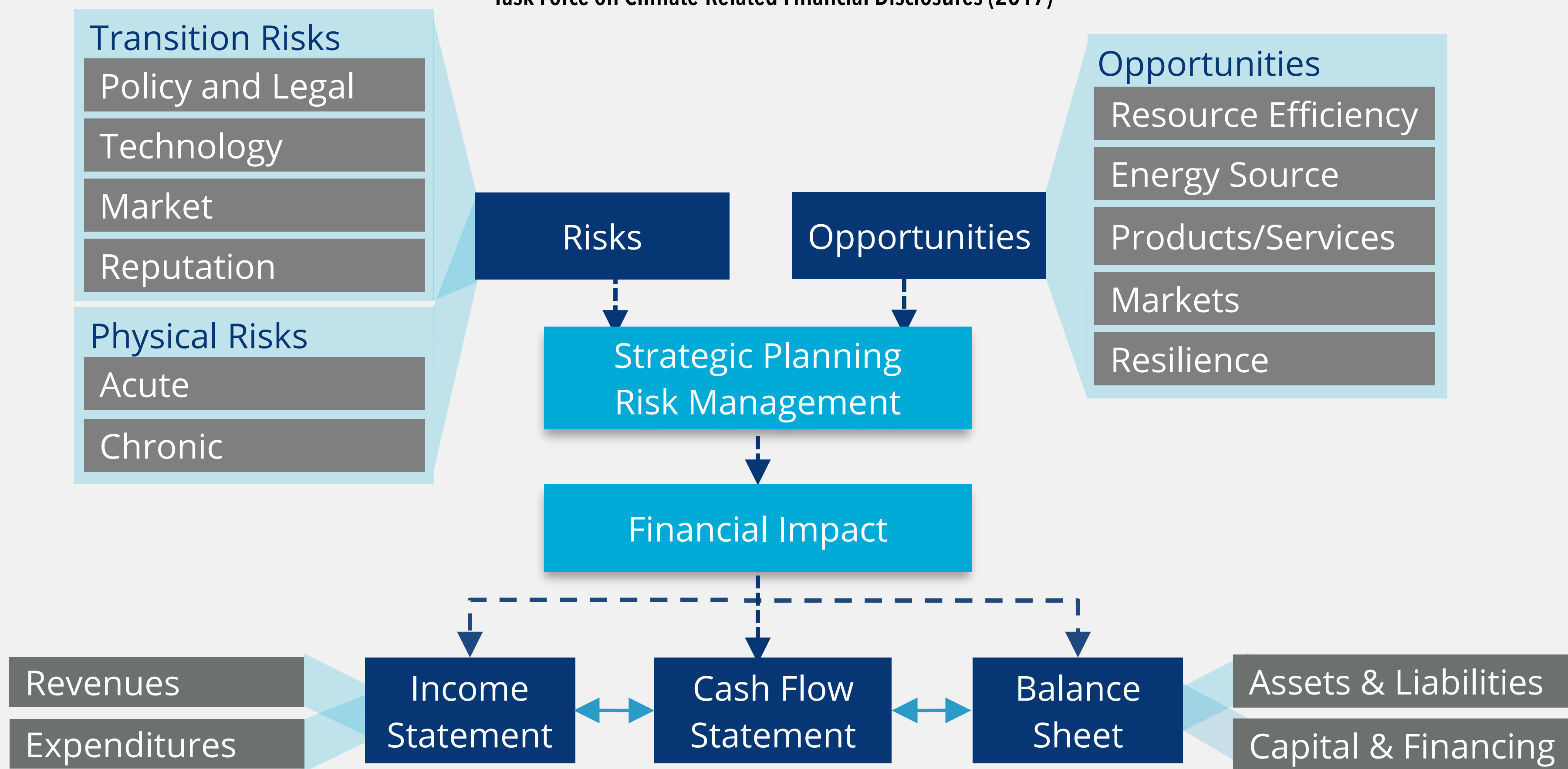


Woodbridge, NJ
Photo credit: Grant Delin, Scientific American

**Not only is climate action a societal imperative –
it also makes good business sense.**

Climate-Related Risks, Opportunities, and Financial Impact

Task Force on Climate-Related Financial Disclosures (2017)



**Not only is climate action a societal imperative –
it also makes good business sense.**

Climate-Related Risks and Opportunities relevant to Rutgers



Big 10 Schools with Climate Action Plans

University	Plan Date	Neutrality Target	Actual Reduction
Michigan State University	2012	-	28% from 2010-2016
Northwestern University	2017	2050	
Ohio State University	2011	2050	6% from 2006-2018
Pennsylvania State University	2002	-	32% from 2005-2019
University of Illinois at Urbana-Champaign*	2010, 2015	2050	32% from 2007-2018
University of Maryland-College Park	2009, 2017	2050	28% from 2005-2016
University of Michigan	2015, ongoing	Under evaluation	8% scope 1 & 2 from 2015-2018
University of Minnesota-Twin Cities	2010	2050	37% from 2008-2018

Task Force Goals

Develop Rutgers' strategies for

1. *Carbon Neutrality*: contributing to achieving global net-zero carbon dioxide emissions
2. *Climate Resilience*: Enhancing the capacity of the university and the State of New Jersey to manage the risks of a changing climate

Rutgers is already a leader in climate change research and engagement

- The Rutgers Institute of Earth, Ocean, and Atmospheric Sciences, the Rutgers Climate Institute, and the Rutgers Energy Institute bring together over 200 faculty working to understand our planet and how to live on it in a more sustainable and resilient manner.
- Rutgers is among the top four Big 10 schools in research activity in Earth, ocean, and atmospheric sciences (\$19 million in FY 2018)
- Faculty active in efforts like UN Intergovernmental Panel on Climate Change, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, and the National Climate Assessment
- Pioneering efforts in community-engaged climate research and engagement, through initiatives like New Jersey Climate Change Alliance, Getting to Resilience, and the Coastal Climate Risk & Resilience graduate program
- Host of the new New Jersey Climate Change Resource Center

Rutgers has already taken actions to reduce its emissions

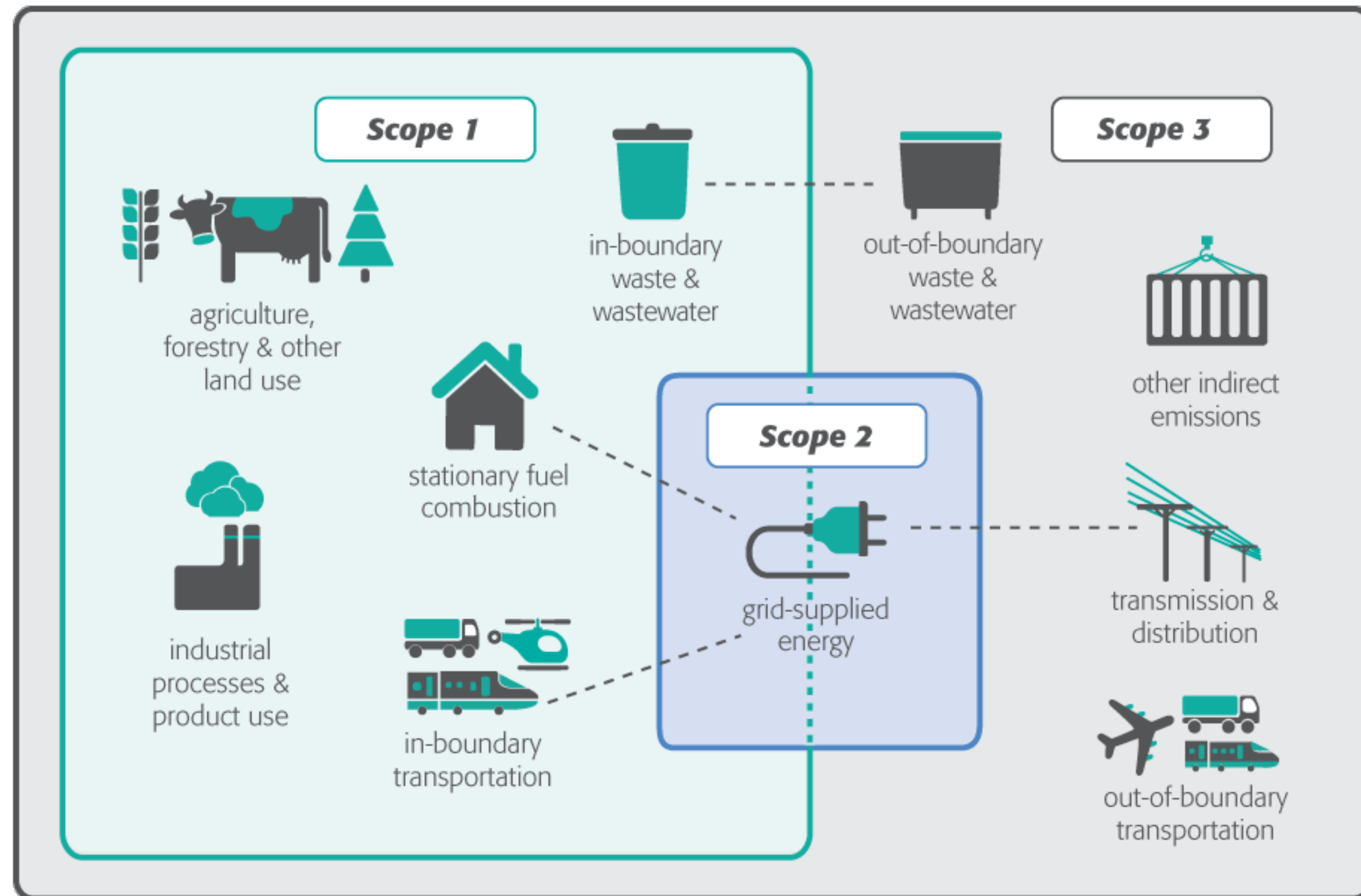
- 10 MW of on-campus solar capacity
- New facilities built to LEED Silver standard
- Sustainability is key objective of 2015 Master Plan



Rutgers faces distinctive challenges and opportunities

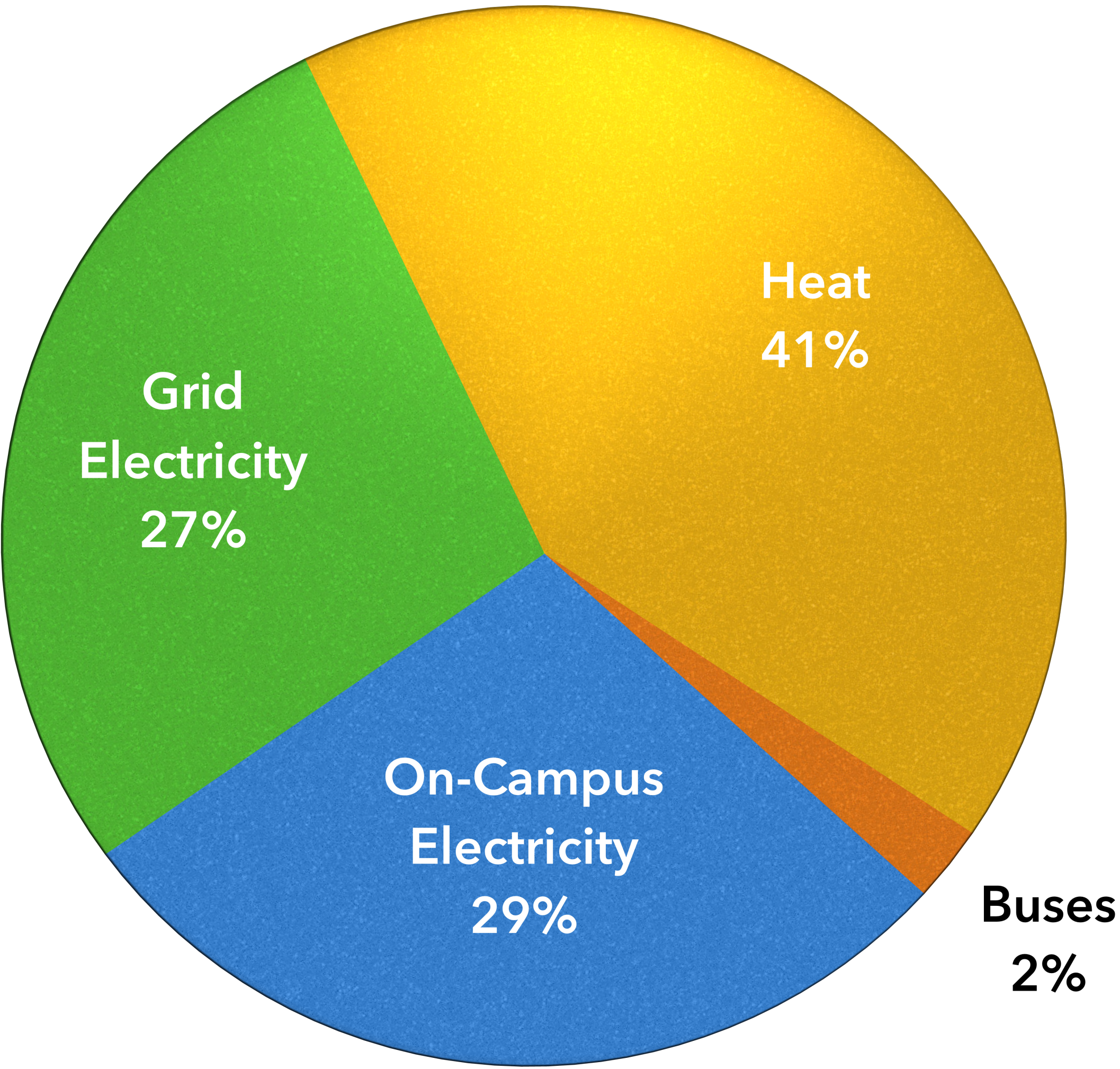
- Population of nearly 100,000 students, faculty, and staff – the size of a small city, spread out over nearly 10 square miles across the state of New Jersey
- More than 1000 buildings, with 29 million square feet of floor space, 42% over 50 years old
- 60 miles of underground water and sewer lines
- One of the largest dining/food service operations in higher education
- One of the largest residence hall systems (16,000 beds) in the country
- One of the largest campus bus systems in the US (second largest in New Jersey)
- \$4.4 billion operational budget, including \$245 million spent on supplies and \$123 million on plant operations and maintenance
- \$5.1 billion deferred maintenance liability
- Thin operating margin

Emissions come from a variety of sources



Where do Rutgers' greenhouse gas emissions come from?

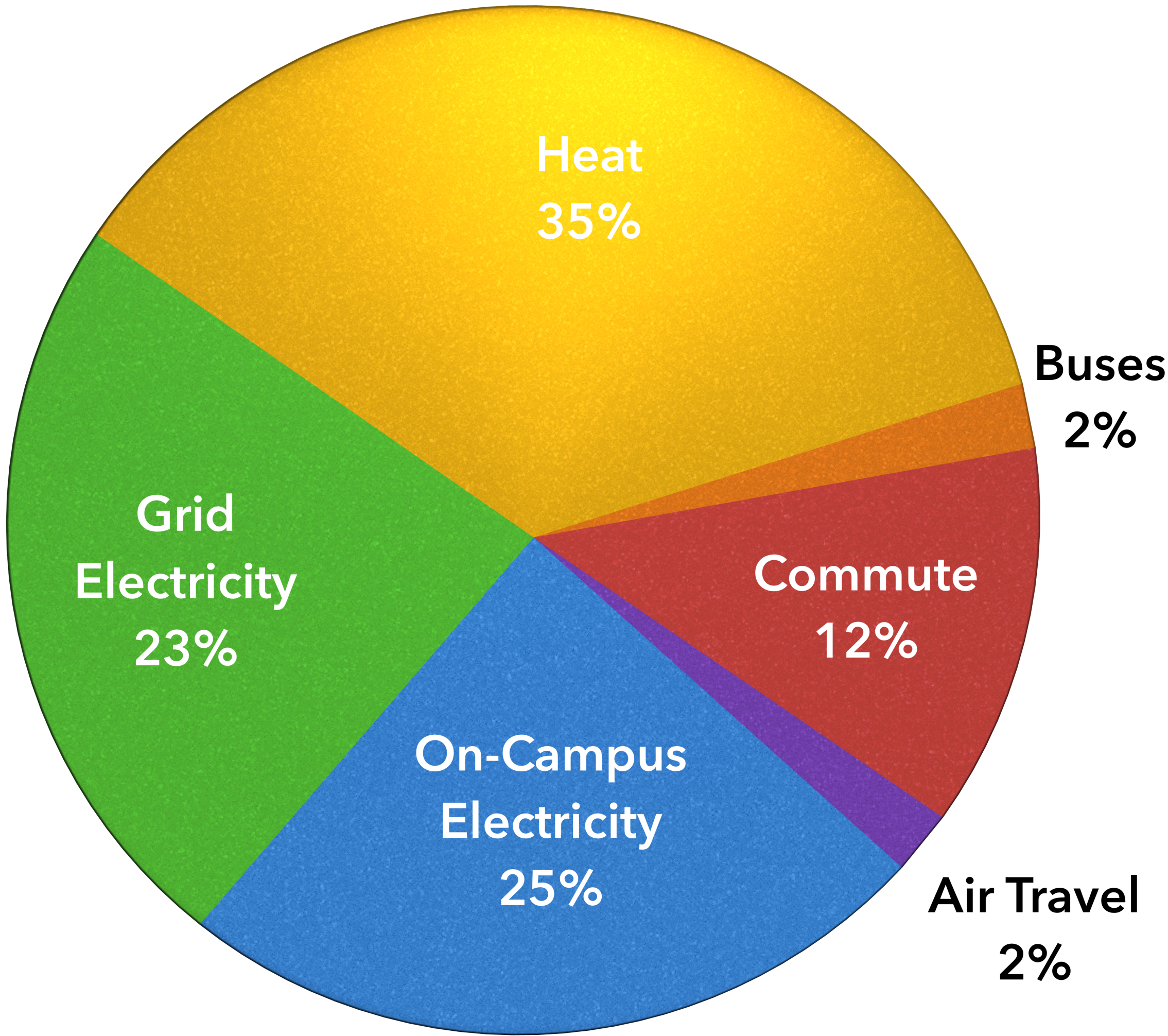
Case Study: Rutgers-New Brunswick, FY 2019, based on IPO data



Scope 1 (direct on campus): 151 thousand tonnes
Scope 2 (purchased electricity): 57 thousand tonnes

Where do Rutgers' greenhouse gas emissions come from?

Case Study: Rutgers-New Brunswick, FY 2019, with travel approximations



Scope 1 (direct on campus): 151 thousand tonnes

Scope 2 (purchased electricity): 57 thousand tonnes

Scope 3 indirect travel emissions: about 35 thousand tonnes

Scope 3 supply chain emissions: currently unquantified

Working Group structure

- 1. Energy and Buildings** (Rachael Shwom and Mike Kornitas, co-chairs)
- 2. Transportation** (Bob Noland and Jack Molenaar, co-chairs)
- 3. Food System** (Xenia Morin and Joe Charette, co-chairs)
- 4. Supply Chain and Waste Management** (Kevin Lyons and Nimish Patel, co-chairs)
- 5. Land Use and Offsets** (Marjorie Kaplan and David Schulz, co-chairs)
- 6. Climate Preparedness** (Robin Leichenko and Steven Keleman, co-chairs)
- 7. Climate-Positive Economic Development** (Carl Van Horn and Peggy Brennan, co-chairs)

Working group members – still being identified – will be a mix of faculty, staff, and students, and are not limited to task force members.

Working Group Remits

- Both climate mitigation and adaptation
- Cross-cutting themes related to teaching, research, campus culture, climate-positive economic development
- Topics including:
 - Compelling and impactful approaches Rutgers could pursue, along with their associated greenhouse gas emissions reductions, resilience improvements, financial costs and savings, and co-benefits
 - Implementation pathways, timescales, and progress metrics
 - Roles of different parts of the University, including approaches to overcoming institutional, organizational and cultural challenges
 - Strategies for ensuring participation and accountability of the full university community and, as appropriate, external stakeholders
 - Nexus to catalyzing broader, climate-positive economic development in New Jersey and incorporating equity considerations
 - Key unknowns and gaps that require more analysis.

Timeline of Climate Action Planning process

- **September 2019:** President Barchi inaugurated faculty task force
- **October 2019:** first faculty task force meeting
- **January 2020:** release of pre-planning report, transition to planning phase
- **February 2020:** town halls, start of working group work, start of GHG audit
- **May 2020:** interim report release
- **June-Sept 2020:** continue work
- **Oct-Dec 2020:** report integration, additional town halls
- **Jan-Feb 2021:** public draft of final report
- **Mar-May 2021:** report revision
- **June 2021:** public release of final report

Opportunities for early successes in spring 2020

- Working with external greenhouse gas auditing firm, develop a system for monitoring and reporting emissions
- Green the finance and budgeting process: explore establishing a fund for revenue- and climate-positive energy conservation efforts
- Determine whether to establish renewable energy PPA or purchase RECs to cover campus electricity, or to devote all resources toward on-campus renewable energy development
- Update the university inventory of climate research and teaching

Climate Task Force Membership

- **Robert Kopp**, Co-Chair, School of Arts and Sciences, R-NB
- **Kevin Lyons**, Co-Chair, Rutgers Business School, R-N and NB
- **Clint Andrews**, Bloustein School of Planning and Public Policy, R-NB
- **Elizabeth Demaray**, Camden College of Arts and Sciences, R-C
- **Panos Georgopoulos**, School of Public Health, RBHS
- **Robin Leichenko**, School of Arts and Sciences, R-NB
- **Xenia Morin**, School of Environmental and Biological Sciences, R-NB
- **Robert Noland**, Bloustein School of Planning and Public Policy, R-NB
- **Ashaki Rouff**, School of Arts and Sciences-Newark, R-N
- **Rachael Shwom**, School of Environmental and Biological Sciences, R-NB
- **Carl Van Horn**, Bloustein School of Planning and Public Policy, R-NB
- **Roger Wang**, School of Engineering, R-NB
- **Brian Ballantine**, Chief of Staff, Office of the President
- **Peggy Brennan**, Associate Director and Executive Director for Economic Development and Innovation, NJAES, R-NB
- **Joe Charette**, Executive Director, Rutgers Dining Services, Rutgers-New Brunswick
- **Jeanne Herb**, Bloustein School and Co-Director, New Jersey Climate Change Resource Center, R-NB
- **Marjorie Kaplan**, Associate Director, Rutgers Climate Institute and Co-Director, New Jersey Climate Change Resource Center, R-NB
- **Steve Keleman**, Director of the Office of Emergency Management
- **Mike Kornitas**, Director of Sustainability and Energy, Facilities, IPO
- **Jack Molenaar**, Senior Director of Transportation Services, IPO
- **Nimish Patel**, Chief Procurement Officer
- **David Schulz**, Vice President and University Architect, IPO
- Student members being identified from all four campus units

Upcoming Town Halls

- **February 12, 4-6pm** – Cook Student Center Multipurpose Room ABC, New Brunswick
- **February 17, 4-6pm** – Busch Student Center Multipurpose Room, Piscataway
- **February 18, 4-6pm** – Camden Campus Center MPR, Camden
- **February 25, 4-6pm** – Paul Robeson Campus Center Essex Room, Newark

Watch our website: climatetaskforce.rutgers.edu