SUSTAINABLE DEVELOPMENT GOAL 13: Take urgent action to combat climate change and its impacts

Take action to reduce Georgia Tech emissions: A Feasibility Study for a Georgia Tech Carbon Price Model

PUBP 3320/PUBP 8813 Climate Policy – Class Project

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01/20/2020

Climate change is a global problem and it requires an unprecedented international cooperation and interdisciplinary investigation: engineering, economics, environmental studies and public policies. The complexity of this environmental threat, its abstracted nature and the time lag between current costs and future benefits make the implementation of climate change policies very difficult. This global challenge that does not respect national borders.

Currently, the problem is difficult to solve because there is no cost associated with producing carbon emissions that would move them from being an external to an internalized cost. However, there are a number of regions, countries and institutions around the world that are attempting to remedy this by putting a price on their emissions or setting a trading scheme of permits to emit. Moreover, numerous universities have used carbon prices to meet their carbon reduction goals, to incorporate the social cost of the carbon externality or to create a better campus culture of sustainable actions. By doing so, they are acknowledging that CO2 emissions are a problem and they are taking financial responsibility for ensuring their reduction. While global action is needed to create comprehensive climate change mitigation due to its global nature, carbon prices implemented at smaller local scale like at the university or corporation level is a first step toward the right direction. The SDG 13 Climate Action is perfectly in line with this: by acknowledging the complex and global nature of the climate change problem, institutions around the world are acting to show that they care, they want to reduce their emissions in order to avoid climate change impacts everywhere now and in the future.

Georgia Tech, as a leading scientific research institution in the United States, has a responsibility to be on the forefront of the solution to what science deems as one of the most pressing problems facing humanity. Georgia Tech's slogan, "Creating the Next" calls to the future – first that future needs to be secured. Furthermore, sustainability is not new on campus: the ten-year strategic plan for 2020-2030 of the Georgia Institute of Technology focuses on implementing solutions that make Georgia Tech a leader in the southeast in terms of sustainability. As the office of sustainability states, "Georgia Tech intends to be a leader in sustainable issues and to promote action and awareness through education, research, and business practice. Georgia Tech's 2020 – 2030 Strategic Plan for Sustainable Practice is a 10 year roadmap to create a sustainable campus."

PUPB 3320 and PUB 8813 students with the contribution of the GT Office of Campus Sustainability and the support of the GT Global Change Program and the GT Serve-Learn-Sustain center produced a White Paper with the goal of providing a first analysis of the feasibility for a carbon price to be implemented at Georgia Tech. Students have been divided in three teams, each team has performed the feasibility analysis individually. Their estimates are then merged in this document to provide a more consistent overview of the proposal, possible future scenarios and outcomes. The scope of the project is to answer

two questions: *What should be the initial value of carbon price used at Georgia Tech? How much can the institution reduce under the proposed carbon price path?*

The proposal analyzed historical emissions, projected future GT emissions under a no-carbon price (Baseline) scenario, valued the costs of alternatives and their mitigation potential (emissions that can be abated per $ spent). The analysis shows that starting in 2020 with a carbon price of 10 $/tCO2 Georgia Tech could reduce between 55,274-85,220 tCO2/yr by 2040 and an increase of the carbon price between 36-62 $/tCO2 will achieve a total reduction of emissions between 85,515 – 296,670 tCO2/yr by 2040 resulting in a reduction in emissions between 74% and 89% in 2040 with respect to 2008, on the right track to be carbon neutral by 2050.

This project represented a wonderful even if tough learning experience for students. Throughout the project, students examined alternative plans and consult with faculty, staff and students on the campus to assess the current attitude and possible concerns related to the implementation of a climate action within the institute. The project allowed students to apply their academic knowledge to a practical assignment and provided a platform to educate the community with climate change literacy.

The project represented an interdisciplinary learning experience for students who will interface the challenge of climate change and possible solutions through different perspectives (social, environmental and engineering). By defining the need of a price on CO_2, students learned about the science of climate change and the impacts on the environment and humans in the present and in the future across the world. By assessing alternative implementation designs and possible outcomes of the carbon price, students were exposed to current mitigation policies implemented at the regional, state and city level, the controversy behind the public debate about climate change, and the possible technological solutions that the school can implement to reduce the burden of the carbon price (e.g. more solar panels vs. more efficient buildings).

Finally, this project represents only the first phase of a multi-phase effort to engage the campus community and administration in developing more actionable plans to meet the Institute's carbon neutrality goals. Based on the results of the study and interest within the community, future engagement efforts may include building a faculty working group to more robustly assess pricing models, implementing pilot projects, and developing an internal whitepaper for leadership consideration. This idea contributes to the ultimate goal that the Institute matches the leadership of the research and instructional efforts by modeling climate action in practice for student and faculty study.