

Climate Resilience in Carlisle and Cumberland County: Economy and Finances

By Isabella Moes
Dickinson College

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1. Introduction

The following report examines climate resilience in Cumberland County through the lens of economy and finances. In particular, the planning areas of agriculture, tourism & recreation, employment & income, and funding for climate resilience and greenhouse gas reduction are detailed. Within these parts, climate stressors, vulnerabilities, strengths, weaknesses, resilience strategies, indicators and metrics are covered in order to explore how Cumberland County fares with increasing climate hazards from an economic standpoint.

2. Agriculture

Agriculture is an important asset for Cumberland County. In 2017, the total acreage of farmland in the County was 169,654. This was a 10 percent increase from 2012 (Census of Agriculture County Profile, 2017). Due to the expanding amount of farmland in the County, it is crucial that environmental stressors be addressed. Within this planning area, both excessive rainfall and drought pose a threat to agricultural production, which speaks to the fluctuation in extreme weather events in recent years. For instance, from 2018 to now, some farms in the County have gone from being underwater to barely surviving drought (J. Foschi, personal communication, November 30, 2023). In addition, higher average temperatures are a stressor, as negative consequences include ideal conditions for insects and disease as well as the possibility of weeds from warmer climates invading the area. These stressors are important to address as

agricultural land composes around 27 percent of all land use in the Commonwealth (Pennsylvania Climate Impacts Assessment Update, 2015).

Climate change is expected to reduce labor productivity and economic output within agriculture. If output is reduced for long periods of time, growth rates are affected, and therefore cumulative losses in the economy can occur (Fifth National Climate Assessment, 2023). Agriculture is especially vulnerable in terms of its prices, because if a greater frequency of extreme weather events occur, supply will be affected. In particular, dairy, a key component of Pennsylvania agricultural sales, could see price increases due to losses in milk yields from heat stress. As well as this, food crops that are vulnerable to quality defect, such as fruits or vegetables, would be negatively impacted (PA Climate Impacts Assessment Update, 2015).

One strength that the County has in this planning area is a Farmland Preservation Plan that is in place. In addition, there has been a heightened awareness among farmers and there are more organic farms than there ever were in the recent past (J. Foschi, personal communication, November 30, 2023). A major weakness is the prevalence of drought, specifically the drought that occurred this year and posed a challenge to crop yields. As well as this, people dumping food process residuals has become an issue in the County in recent times (K. Neiderer, personal communication, November 30, 2023). According to the 2017 Census of Agriculture, although the total acreage of farmland has increased in past years, the actual number of farms in the County has decreased by 11 percent since 2012. Increasing extreme weather events will not help improve this statistic.

In terms of climate resilience strategies within agriculture, there is a need for improved technologies to reduce pollution costs, as well as to attract more investment into the sector. In addition, a greater level of flexibility and intervention among farmers will be needed. An example of this would be as growing seasons extend and the weather becomes less reliable, particular feed crops such as corn and soybean will have to be plated as different hybrids (PA Climate Impacts Assessment Update, 2015, p. 87-88). It will be vital to have a greater cohesive agricultural strategy between municipalities in the County in order to maximize effectiveness. Since there are many family owned, multi-generational farms throughout the County, it could be

beneficial to create plans to encourage retention, whether that be greater awareness of farming as a career within the County or greater financial opportunities given towards the agricultural community, such as grants.

There are several indicators and metrics within agriculture that should be examined in determining if progress is being made. These include changes in crop yields, changes in farm income, and changes in consumer prices and food expenditure (PA Climate Assessment, 2015, p. 17).

3. Tourism & recreation

Tourism is a key industry for the county, and the county's natural assets are extremely economically valuable. For instance, in 2014, tourism revenue in the County totaled 774.1 million dollars, which at the time was third in PA behind Philadelphia and Pittsburgh (Return on Environment Cumberland County, 2015). The greatest climate stressor for tourism and recreation in the County is increasing average temperatures. With an increasing average number of hot days per year, the public's willingness and ability to enjoy recreational opportunities in the County becomes more limited. Moreover, heavy precipitation and inland flooding can have devastating economic impacts. More frequent and stronger heavy precipitation events are already observable in the Northeast, which leads to runoff and flooding. If the areas in the County where tourists frequent are subject to increased extreme weather events, this places pressure on the County's 911 system (J. Faschi, personal communication, November 30, 2023).

There are several aspects of this planning area that are vulnerable in the face of increased frequency of extreme weather events. According to Return on Environment Cumberland County (2015), 30 percent of the county is covered by woodlands, mainly located along the northern and southern ridgelines. Increasing average temperatures leads to an increased risk of forest fires in these areas of the County. The ability within the County to perform leisure activities could be altered if there are less recreation opportunities, specifically in relation to snow and ice-based recreation. Past the mid-century mark, Pennsylvania's ski and snowboarding resorts are not expected to be economically viable, especially in southern Pennsylvania. In this region

specifically, snow coverage for these forms of recreation is projected to decline by 20 to 60 percent. In addition, fishing in Pennsylvania will be changed with increasing average temperature. In particular, cold-water fishing will be affected. With increased temperatures there will also be increased algal blooms in inland lakes (Pennsylvania Climate Impacts Assessment, 2021, p.45). In terms of increased levels of flooding, the County's planning and investments within tourism and recreation may be altered, because flooding impacts which projects receive grant funding (Pennsylvania Climate Impacts Assessment, 2021, p. 56). A loss in revenue in the tourism and outdoor recreation sector could also be expected, as the number of days expected to exceed 100 by mid-century is 1-12, which will result in less people participating in outdoor leisure (Pennsylvania Climate Impacts Assessment, 2021, p.72).

An example of a strength the county has is current green infrastructure along streams. This infrastructure has accounted for reducing tax burdens by avoiding annual expenditures of up to 174.8 million dollars for water supply, 35.1 million dollars for flood control and stormwater management, and 11.5 million dollars for water quality (Return on Environment Cumberland County, 2015). There are several non-profits within the County that are protecting wildlife and streams. A standout example is the Central Pennsylvania Conservancy which protects local land and natural resources within Cumberland County as well as five other counties in South-Central Pennsylvania. In addition, the County's position as a Northeast transportation hub leads to many people passing through the area, exposing them to the natural resources it has to offer. The County's 911 center also drills for environmental disasters, which is useful in the event of increased climate hazards (J. Foschi, personal communication, November 30, 2023). The County has a robust system of human services (K. Neiderer, personal communication, November 30, 2023).

Weaknesses in this planning area also connect with the other planning areas, as without proper access to State funds, tourism and recreation sites within the County will decline. An important resilience strategy will be including the return on environment in decision-making, which requires a greater understanding of the financial value of the County's natural assets. Also, creating incentives (e.g., tax incentives to encourage people to protect natural system services), involving schools through environmental education programs, and assisting sustainable

businesses through providing them with data on the financial impact of the environment on the local economy are ways for the county to become more climate resilient (Return on Environment Cumberland County, 2015). As well as this, protecting forested watersheds used for drinking water sources can reduce capital, operational, and maintenance costs for drinking water treatment. While it may be obvious, it is also valuable to not rely on tourism and focus on other aspects and sectors of our economy (USEPA, 2016). Indicators that the County is reducing the number of vulnerabilities within this planning area include the percent or measure of the County that utilizes outdoor spaces and prioritizes conservation.

4. Employment & incomes

Climate stressors for employment and incomes include heat stress. Primarily, outdoor workers, such as those who work in agriculture, construction, or landscaping, run the risk of overheating in the County's increasingly hot temperatures. This is significant, as heat exposure leads to heat-related symptoms such as dizziness or headaches. It can even lead to more consequential outcomes such as heat stroke (US Department of Labor). Also, businesses are paying more money than usual to run air conditioning, placing a greater financial pressure on firms within the County. In addition, increasing extreme weather events are a stressor in this planning area as they can affect people's ability to come to work, and even affect employment levels the more frequently they occur. As businesses in the County experience increased closures due to climate related events, employment will be negatively impacted (A. Underwood, personal communication, 30 November 2023).

Small businesses without the capacity to spend money on backup systems necessary to function in the event of extreme weather events will be vulnerable with increased climate hazards. For instance, larger firms have the monetary resources to buy back up servers, storage in the cloud, or generators, and this is something smaller firms may not have the resources or capacity for (J. Gayman, personal communication, November 21, 2023). Another vulnerable population is the people in the County that are living below the poverty line. According to the FEMA Resilience Analysis and Planning Tool, the percentage living below this threshold for Cumberland County is 7.32.

A strength for the County is that unemployment rates have consistently been lower than others in the Commonwealth (Cumberland Area Economic Development Cooperation, 2015). The percent unemployed in the labor force is 3.54 percent for Cumberland County. This is significantly lower than both surrounding Dauphin and York counties, whose unemployment rates are 4.51 and 4.66, respectively (FEMA Resilience Analysis and Planning Tool). With unemployment rates at a manageable level, the County is at an advantage in this way. There is also potential funding in place to support indigent individuals that contribute to the level of climate resilience the County already. For instance, there is the Community Development Block Grant (CDBG). These are annual grants focusing on decent housing and a suitable living environment, as well as expanding economic opportunities for low to moderate income persons. The flexibility of this program allows communities to implement “strategies tailored to their own needs and priorities” (US Department of Housing and Urban Development). Another example is the Weatherization Assistance Program, which is a program in PA aimed to increase energy efficiency in homes by reducing energy costs. It is for low-income individuals, meaning at or below 200 percent of federal poverty level, and priority given to elderly, disabled, families with children (Pennsylvania Department of Community and Economic Development).

Weaknesses for this planning area in the County include income inequality. There is room for improvement for Cumberland County with income inequality; on the Gini Index, which measures how much the distribution of wealth among individuals in an economy deviates from a perfectly equal distribution, Cumberland County is at 0.42, with 0.00 being perfect equality and 1.0 being perfect inequality (FEMA Resilience Analysis and Planning Tool). A move towards greater income equality could help with the affordability of resilience actions such as insurance or air conditioning.

In terms of strategies for climate resilience, it is important for businesses to invest in durable systems. For instance, having a secondary data provider in the event of an extreme weather event, or having robust disaster recovery plans and running frequent tabletop tests are steps necessary in a climate resilient economy. Businesses can also shape the local economy through investing in assets such as renewable energy or green bonds, and committing capital to help

resilience endeavors (Jeff Gayman, personal communication, November 21, 2023). These strategies will lessen the likelihood of business closures and therefore help employment levels.

A key indicator and metric for this planning area is the percentage of people below the poverty line in the County, as the higher this number is, the more people in the County experience climate stressors disproportionately. As well as this, the percentage of uninsured persons living in the County should be monitored.

5. Funding for climate resilience and greenhouse gas reduction

The main climate stressor facing funding for climate resilience and greenhouse gas reduction is heat stress. Rising temperatures put pressure on buildings, roads, and other infrastructure which in turn need more money to upkeep. In addition, flooding is an issue the County has seen in the past several years, especially location wise being on the border of the Susquehanna, as the County drains into this river (J. Foschi, personal communication, November 30, 2023). Increasing extreme weather events will lead to added pressure on the County's funding capabilities, which is why this issue is important to confront.

A large vulnerability within this planning area is dated infrastructure. This is a characteristic of buildings throughout the Northeast, and is especially relevant within the County. There are buildings in the County without air conditioning or without modern insulation and cannot withstand the increasing average number of days that are above 100 degrees. In particular, renters who have less overall agency to make needed improvements will be affected, as well as people living below the poverty line who simply cannot afford to do so (A. Underwood, personal communication, November 30, 2023).

The County has programs in place that are strengths pertaining to this planning area. There is an Affordable Housing Trust Fund with an emergency repair for air conditioning and heating for indigent seniors within the County, and several other electric suppliers have programs such as these. Also, in terms of infrastructure, a 5-dollar tax per car has been approved for bridge repair within the County. This generates around 1.2 million dollars annually towards the repair of

County owned bridges and is also being used to help the municipalities (K. Neiderer, personal communication, November 30, 2023). The County has several climate resilience plans already in place. Additionally, there are other plans that are relevant to the issues of climate resilience, such as a hazard mitigation plan and a climate action plan. The fact that these plans are established is useful in securing grants through government entities such as the Department of State Emergency Management (J. Anderson, personal communication, November 30, 2023). Addressing the renter population in the County, there is a rental ordinance within the Carlisle Borough that has repercussions for landlords if they are not meeting a certain criterion with the upkeep of their housing (A. Underwood, personal communication, November 30, 2023).

A weakness that cannot be overlooked for the County in this planning area is the ability to receive funding from the State legislature. Although some funding for climate resilience initiatives within the County comes from taxpayers, in order to make greater strides in achieving a higher level of climate resilience, a larger proportion of money will need to come from the State. This means there needs to be a stronger initiative from the State to make this a prime concern. In addition to this, if Cumberland County taxpayers do not see climate resilience as a top priority, it can make it difficult to allocate funds to its advancement (J. Foschi, personal communication, November 30, 2023).

According to the FEMA Resilience Analysis and Planning Tool (RAPT), the percentage of inactive voters in Cumberland County is 11.39 percent. Compared to surrounding counties, this is a high number, with the percent of inactive voters in York, Franklin, Perry counties being 6.78, 6.29, 5.33 percent, respectively (FEMA Resilience Analysis and Planning Tool). In addition, the infrastructure for advancements that will lower greenhouse gas admissions, such as more electric vehicles, is practically nonexistent. The implementation of more electric vehicles would require more charging stations, as well as an efficient method of disposing the vehicle batteries. For instance, if there are accidents and the batteries catch on fire, the risk of hazmat goes up within the County, and this would place extreme pressure on human services as the County is not equipped to deal with a greater frequency of those types of hazards occurring. All of this requires greater funding than is currently available (J. Foschi, personal communication, November 30, 2023).

In order to increase the County's funding for the purpose of climate resilience, elected officials must be held accountable and understand that this is a top priority. Increasing voter turnout is a way to do this, through strategies such as voting incentives, increased polling accessibility, and more transparent communication and outreach. In addition, Cumberland County's public servants should continue to build a relationship with the State in order to demonstrate needs for funding. This could possibly include a collaboration with other surrounding counties, such as York, Perry, or Franklin, to illustrate the high priority of this issue (K. Neiderer, personal communication, November 30, 2023). On a smaller scale, to incentivize the public to update their own homes and infrastructure, the message should be clear that their own money will be saved in the long-term through sustainable actions such as replacing lightbulbs or boilers. Programs such as NEIF (National Energy Improvement Fund) make it more affordable for homeowners to do so by providing them with the finances for these projects (A. Underwood, personal communication, November 30, 2023).

In terms of indicators and metrics to determine if progress is being made in this planning area, the percentage of the County that are inactive voters should go down, meaning a greater proportion of the population votes. As well as this, the percentage of buildings in the County that were built before the mid 1900s, and the number of renters in the County should be monitored. The greater number of older buildings that there are in the County, the more funds will need to be allocated to upkeep and update them. With more renters, the county should be mindful if living conditions are being met and if the means and funds to improve them are available. Currently, the percent of owner-occupied housing is 67.16 percent (FEMA Resilience Analysis and Planning Tool). This is a statistic that the County can improve.

6. Conclusion

Across the planning areas examined in this report, there are many dynamics within the County that encourage and hinder climate resilience improvement. In particular, relations with the State legislature should be made a priority if more funding is to be obtained for these

initiatives. Through this analysis, the interconnectedness of these planning areas becomes apparent, and the County can plan to take advantage of these effective resilience strategies.

A key takeaway is that it is important for Cumberland County to develop and maintain an awareness to these issues, even if certain climate stressors are not at the forefront of our daily lives in this region. Hopefully, this sense of awareness can inspire preparedness, and furthermore a greater level of climate resiliency throughout the County.

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