

**SUMMARY****Annotated Bibliography for Climate Change and Natural Hazards Planning**

This annotated bibliography was developed by students in the University of Kansas Department of Urban Planning's Special Topics course on climate change and disasters planning in the summers of 2015 and 2016. Working in small groups, students compiled the sources and provided the annotations. Professor Ward Lyles compiled and thematically organized the annotations.

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**International – General**

Brundell, June. David Cobon, Grant Stone (QCCCE) and Neil Cliffe. "The Climate Change Risk Management Matrix." Queensland Climate Change Centre of Excellence Department of Environment and Resource Management, 2011.

<https://www.longpaddock.qld.gov.au/products/pdf/climatematrixworkbook.pdf> , n.d. Web. 11 June 2015.

An electronic version of the Climate Change Risk Management Matrix is one risk management approach that can help identify the impacts, adaptive responses and risk and vulnerability associated with climate change. Identifying and analysing risks and opportunities, using this risk management approach, can help to plan responses to climate variability and change and can enable organisations to be proactive and more effective in adapting to future uncertainty. This workbook, based on Australian climate change impacts and risk management: a guide for business and government.

Cook, John. "Science AMA Series: I Am John Cook, Climate Change Denial Researcher, Climate Communication Fellow for the Global Change Institute at the University of Queensland, and Creator of SkepticalScience.com. Ask Me Anything! • /r/science." *Reddit*. 4 May 2015. Web. 11 June 2015.

An online discussion thread with a climate communication research fellow at Queensland University, John Cook. This resource explores the psychology surrounding climate change.

UN Human Settlements Programme *Guiding Principles for City Climate Action Planning*. Publication. Nairobi: United Nations Human Settlements Programme, 2015 Web Page: <http://www.citiesalliance.org/node/5625>

This publication reviews popular strategies in climate action planning among cities across the world. The publication suggests a set of eight globally acknowledged strategies that are flexible based on where they are being used in the world. These strategies aim to reduce emissions and other aspects that are leading causes of climate change.

**International – Climate Mitigation**

Wogan, J.B. (2014). A Better Way for Cities to Measure Greenhouse Gases. *Governing Magazine*. Retrieved from <http://www.governing.com/topics/transportation-infrastructure/gov-cities-greenhouse-gas-emissions-measurement-tool.html>

Much of the climate change planning is being done on state and local levels, yet measuring emissions can be more challenging the smaller the area. This article discusses how ICLEI provides more guidance to local governments on measuring emissions to create data-driven plans.

**International – Climate Adaptation**

Gallucci, Maria. (2013, June 20). 6 of the World's Most Extensive Climate Adaptation Plans. *Inside Climate News*. Retrieved from: <http://insideclimatenews.org/news/20130620/6-worlds-most-extensive-climate-adaptation-plans>

An article, published by Inside Climate News in 2013, discussing the overall state of Climate Adaptation Plans both in America and internationally. The article gives a brief overview of the investment amount for plans of this type, citing figures such as the UN's assessment that the world could end up spending between \$49 billion and \$171 billion on such plans for the next couple decades. The article also outlines and provides links to 5 specific plans from across the globe: New York City; London; Chicago; Rotterdam; Quito, Ecuador and Durban, South Africa.

Gill, S. E., et al. (2007). Adapting cities for climate change: the role of the green infrastructure. *Built Environment*, 33: 115-133. Retrieved from: [http://urbanspace.rec.org/files/Article\\_Gill\\_Adapting\\_Cities\\_for\\_CC.pdf](http://urbanspace.rec.org/files/Article_Gill_Adapting_Cities_for_CC.pdf)

Although the authors of this article use the U.K. as a case study site, the article explicitly explores the relationship between urban form and climate change and uses modeling to quantify energy exchange and surface runoff in urban areas and their relationship to green infrastructure. Different adaptation strategies are presented and tested.

**National – General**

American Planning Association (APA) (2014). Hazard mitigation policy guide. Retrieved from [https://planning-org-uploaded-media.s3.amazonaws.com/legacy\\_resources/policy/guides/pdf/hazardmitigation.pdf](https://planning-org-uploaded-media.s3.amazonaws.com/legacy_resources/policy/guides/pdf/hazardmitigation.pdf)

Ratified by the APA Board of Directors, the Hazard Mitigation policy guide is the APA's official list of suggested policies and best practices for hazard mitigation planning. The guide covers all aspects of hazards planning from incentives for development in areas with lower risks to policies for various types of natural hazards.

American Planning Association (APA) (2011). Policy guide on planning and climate change. Retrieved from <https://www.planning.org/policy/guides/adopted/climatechange.htm>.

Similar to APA's hazard mitigation policy guide, the policy guide on climate change establishes the reasons that planning is essential to climate change mitigation and adaptation. The guide provides practitioners with a list of best policies, policy wording, and reasons for why the policies should be supported. Even when individual planners want to assist their community in adopting climate change mitigation and adaptation policies, they may face political and cultural opposition; the APA's policy guide provides economic and health reasons for combatting climate change that could help communities be more receptive to the suggestions.

Babcock, Matthew. (2013). State Hazard Mitigation Plans and Climate Change: Rating the States. *Columbia Law School Center for Climate Change Report*. Retrieved from [https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Students/SHMP%20Survey\\_Final.pdf](https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Students/SHMP%20Survey_Final.pdf)

This report from Columbia's Center for Climate Change uses survey data to analyze the strengths and weaknesses of statewide hazard mitigation plans and rank them accordingly. While the focus is on plans at the state level, the evaluations of particular strategies are applicable to local plans, as well.

Childers, Daniel, Mary L. Cadenasso, J. Morgan Grove, Victoria Marshall, Brian McGrath and Steward T.A. Pickett. (2015). An Ecology for Cities: A Transformation Nexus of Design and Ecology to Advance Climate Change Resilience and Urban Sustainability. *Sustainability, Volume 7, Issue 4*. Retrieved from: <http://www.mdpi.com/2071-1050/7/4/3774/htm>.

The authors propose a fundamental shift from the way urban ecology is thought of and implemented in this article published in 2015. The authors detail different elements that make up different types of urban infrastructure (Grey, Green, Blue and a new one they propose: Turquoise) and the traditional way they are thought of. The article examines what is presented as an issue – the current thought process behind land use decisions – and offers a solution in the form of a new conceptual framework for developing and implementing their methodology using conceptual arguments as well as case studies from across the United States.

Cisneros, Henry, Gregory Page, Robert E. Rubin, George P. Shultz, Donna E. Shalala, Olympia Snowe, and Alfred Conner. "The Economic Risks of Climate Change in the United States." *Risky Business* (2015): Print.

This article is important to creating a climate change plan because it looks at the "heartland" of the United States, and how climate change will affect agriculture, energy demand, and infrastructure. Underneath these broad categories they examine the risk and cost that changing these structures, and adapting due to climate change will have on economic factors like labor, productivity, and health.

Executive Office of the President. June 2013. *The President's Climate Action Plan*. Washington, D. C.: [whitehouse.gov](http://whitehouse.gov)  
<https://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>

Created by President Obama, this executive plan lays out three key focuses for the United States in terms of reducing emissions and lessening the contributions of Americans to climate change. These key focuses are leading international efforts in preparing and dealing with climate change, reducing emissions, and preparing America for the effects of climate change.

Howe, and Mildenerger. "Yale Climate Opinion Maps." - *The Yale Project on Climate Change Communication*. Yale, 2014. Web. 11 June 2015.

This is a map that visualizes public opinion on climate change issues that includes beliefs, risk perception and policy support.

Institute for Tribal Environmental Professionals, and Northern Arizona University. (2015). "Tribal Climate Change Adaptation Planning Toolkit." *Tribes and Climate Change*.  
[http://www4.nau.edu/tribalclimatechange/resources/res\\_apkit.asp](http://www4.nau.edu/tribalclimatechange/resources/res_apkit.asp)

This is actually a downloadable zip file filled with a variety of documents, spreadsheets and checklists for creating a climate adaptation plan. For my specific research purposes, it's the jackpot, however the template format allows this toolkit to be valuable to any jurisdiction interested in climate adaptation. The authors encourage policymakers to tweak the materials to fit their jurisdiction's specific needs, making this a flexible method for creating climate adaptation plans and policy.

Johnson, Jay. (2015). "Weaving Indigenous and Sustainability Sciences: Diversifying our Methods." National Science Foundation.

This is a report sponsored by the NSF, and written by folks from the University of Kansas geography department. It is the product of a workshop focused on climate science and indigenous values/practices. It highlights the paradigms of "sustainability science" versus "indigenous science," noting differences, areas for collaboration, potential protocol considerations to facilitate collaboration, and ends with recommendations for scientists, funding mechanisms, and opportunities for future research. This source is a total gem for anyone interested in the relationship between positivist science and indigenous values.

National Oceanic and Atmospheric Administration "Teaching Climate." *NOAA Climate*. Climate.gov, n.d. Web. 10 June 2015.

This resource provides several informational videos about the science of climate change. As behaviors and values are difficult to change, demonstrating the sound science of climate change first and foremost is key. Living in a fairly politically conservative area that will not be the first region to dramatically feel the effects of climate change, ensuring

the public's faith in the CAP's policies and programs will be vital. Videos, visuals, and interactive tools provided on this site will aid in phase one of the planning process.

National Association of Development Organizations. (2011). Resilient Regions: Integrating Economic Development Strategies, Sustainability Principles and Hazard Mitigation Planning. Retrieved from: <https://www.nado.org/wp-content/uploads/2011/07/NADOResilientReport.pdf>

NADO (National Association of Development Organizations) published this report in 2011 that highlights many different regions and cities from across the country that have implemented resilient techniques in their adaptation to hazards, with an emphasis on climate change and related issues. The report takes a planning oriented perspective and provides many different examples for how to adapt to, mitigate for and recover from climate change related events.

O'Sullivan, Francis. "Mit ClimateColab Proposals Portlet Mit ClimateColab Proposals Portlet." *Energy-Water Nexus*. MIT, 2015. Web. 11 June 2015.

This resource is a crowdsourcing platform from MIT to create proposals on what to do about climate change--a good resource for innovative solutions. They are currently taking proposals for climate action plans, here: <http://climatecolab.org/web/guest/plans/-/plans/contestId/1302001>.

Reeve, Cara. (2014). *Climate Smart Communities Program*. <http://www.nwf.org/pdf/CS-Communities/CSC%20Program%20Factsheet.pdf>

This fact-sheet is a simple to understand, fact-based primer for communities about how climate change will affect the urban ecosystem, as well as outlining new risks to urban areas that come to the fore with climate change. This program, as well as all NWF programs, encourages sustainable landscape planning for cities and outline adaptation strategies.

Schwab, J. (2010). Hazard mitigation planning: Integrating best practices into planning. *American Planning Association (APA) Planning advisory service, Report Number 560*. Retrieved from <https://www.planning.org/research/hazards/pdf/560.pdf>.

"Hazard Mitigation Planning" was the result of increased awareness of the need for resources aimed at assisting communities understand proper development and planning principles that would aid in protecting residents from the negative impacts of hazards. The report employs case studies to highlight best hazard mitigation planning practices used across the United States. Highlights include tips on integrating hazards mitigation into plans the community may already have in place and references to the impact that climate change could have on the future of natural hazards and hazards planning.

US Environmental Protection Agency. "Local Climate and Energy Webcasts | State and Local Climate and Energy Program | US EPA." Web. 11 June 2015.

This resource includes podcasts provided through the EPA about local climate action planning. The topics include adaptation, community design and planning, communications, developing climate action programs, emissions, energy efficiency, funding initiatives, etc.

US EPA. Climate and Energy Resources for State, Local and Tribal Governments: Local examples of climate action. <https://www.epa.gov/statelocalclimate/local-examples-climate-action>

The Environmental Protection Agency gives a list of about 18 cities or counties that provides a diverse range of models for climate action planning.

United States Environmental Protection Agency. (2015, June 9). *NEPAssist*. <http://nepassisttool.epa.gov/nepassist/entry.aspx>

The NEPAssist tool is a web-based application containing environmental data from the EPA's Geographic Information System databases. This tool can be used to identify endangered animals, critical habitats, areas of air and water quality non-attainment and other information that would be beneficial to know when developing a climate plan.

U.S. Environmental Protection Agency Local Climate and Energy Program. (2016). Local Climate Action Framework: A Step-by-Step Implementation Guide. Retrieved from <https://www.epa.gov/statelocalclimate/local-climate-action-framework-step-step-implementation-guide>

The EPA's Local Climate and Energy Program has developed instructions on creating a climate action plan and provides the supporting resources. In addition to suggestions for engaging stakeholders, the website also lists [examples of plans](#) to provide a model for a local plan. Included on this list is Mission, KS.

U.S. Global Change. "National Climate Assessment." *National Climate Assessment*. Web. 07 July 2016.

Released from the National Climate Assessment, this website provides an extremely in-depth review of all the hazards, vulnerabilities, and existing conditions that present risks to all Midwest states as well the procedures to best adapt to the risks. Throughout the six pages of information much of the focus is on how the future holds challenges when it comes to infrastructure, public health, transportation, agriculture, and air quality, among many other things. Using a well balanced mixture of text and infographics this highly accredited website provides a ton of clear information that is essential in planning for climate change adaptation to ensure stable economies from the local to state scale.

United States Department of Transportation. Transportation and Climate Change Clearinghouse. Retrieved from: <http://climate.dot.gov/impacts-adaptations/planning.html>

The U.S. Department of Transportation's site where links are provided for various plans and studies (both national and regional level) specifically relating to climate change adaptation in the transportation sector. In addition to these plans there is also easy access to a variety of other resources from broad spectrum information about the issues to mitigation strategies and organizations that have a piece of the transportation adaptation and mitigation puzzle.

### **National – Climate Mitigation**

Bassett, E. & Shandas, V. (2010). Innovation and climate action planning, *Journal of the American Planning Association*, 76 (4). Pp. 435-450. DOI 10.1080/01944363.2010.509703.

The authors reviewed 20 local Climate Action Plans and determined the general characteristics of the plans including the most frequently cited local actions and policies and differences in descriptions and actions depending on the receptiveness of the populous to climate change. The authors conclude that Climate Action Plans would be more likely to be implemented if professional planners were more engaged in the process and more willing to be innovative in collecting and disseminating climate-related data.

United States Environmental Protection Agency. "Greenhouse gas emissions from large facilities dataset (Facility Level Information GH Tool)." Retrieved from <http://ghgdata.epa.gov/ghgp/main.do>.

This dataset gives the GHG emissions per site, per county in each state. Very useful for making a GHG preliminary assessment. It also demonstrates, with useful maps, the extent of emissions at each power plant site in Kansas.

US Environmental Protection Agency "Sources of Greenhouse Gas Emissions." *Sources.*, n.d. Web Page: <https://www3.epa.gov/climatechange/ghgemissions/sources.html>

Greenhouse Gases are absorbed by the atmosphere, warming the Earth. Human populations have been the largest source of greenhouse gas emissions for almost two centuries now. Of human production, electricity use and production causes the largest release of greenhouse gases into the atmosphere. As temperatures continue to rise, the release of greenhouse gases due to human activity will also rise.

Urban Land Institute. (2008). *Growing cooler: the evidence on urban development and climate change*. Retrieved from: [http://docs.nrdc.org/cities/files/cit\\_07092401a.pdf](http://docs.nrdc.org/cities/files/cit_07092401a.pdf)

A book published by the Urban Land Institute that suggests that decreased dependence on automobile transportation is a key factor in reducing greenhouse gas emissions. The authors offer compact development as an alternative to urban sprawl. The book provides



detailed information on the relationship between vehicle miles traveled, urban form, and climate change as well as offering recommendations for planning and policy.

### **National – Climate Adaptation**

Berger, Michele. The Weather.com Climate Disruption Index: 25 U.S. Cities Most Affected by Climate Change WebPage: <http://stories.weather.com/disruptionindex>

A coastal city submerged under water is the typical depiction of climate change worst-case scenario. Weather Channel report ranks Kansas City 5<sup>th</sup> in the top 25 list of U.S. Cities to be most impacted.

Gober, P., Brazel, A., Quay, R., Myint, S., Grossman-Clarke, S., Miller, A., & Rossi, S. (2009). Using watered landscapes to manipulate urban heat island effects: How much water will it take to cool Phoenix?, *Journal of the American Planning Association*, 76 (1), pp. 109-121. DOI 10.1080/01944360903433113.

One common strategy for adapting to a variety of climate change-related impacts is increasing the density of urban tree canopies and access to green spaces. Although this approach may have few negative impacts on cities with easy access to water, increasing irrigated spaces can seriously deplete water availability in drought-prone areas such as the Southwest United States. This paper uses Phoenix, AZ, as a case study to assess the tradeoffs associated with cooling the city off by using the limited water resources. Other cities in the Southwest can use the Phoenix example as a guide to decisions about landscaping and water conservation policies.

Morelli, Toni Lyn; Yeh, Sharon; Smith, Nikola M.; Hennessy, Mary Beth; Millar, Constance I. 2012. "Climate project screening tool: an aid for climate change adaptation." [http://www.fs.fed.us/psw/publications/documents/psw\\_rp263/Res.Pap.PSW-RP-263](http://www.fs.fed.us/psw/publications/documents/psw_rp263/Res.Pap.PSW-RP-263). Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, n.d. Web. 11 June 2015.

The Climate Project Screening Tool (CPST) is made for integrating climate change considerations into project planning as well as for developing concrete adaptation options for land managers. CPST is a part of the Westwide Climate Initiative project, which seeks to develop adaptation options for addressing climate change through science/management partnerships. The CPST lists projected climate trends for the target region and questions to be considered when designing projects in different resource areas.

Reeve, K. and Kingston, R. (2014). *Green Works for Climate Resilience: A Guide to Community Planning for Climate Change*. Retrieved from: <http://www.nwf.org/~media/PDFs/Global-Warming/Climate-Smart-Conservation/2014/green-works-final-for-web.pdf>

A guide by the National Wildlife Federation that offers different nature-based methods for combating the negative effects of climate change. The guide emphasizes community planning approaches and showcases strategies that various cities have implemented. It is



divided into five categories of climate change impacts and offers suggestions for dealing with each.

U.S. Environmental Protection Agency Office of Water. (2016). 2016 Workplan: National Water Program Response to Climate Change. Retrieved from [https://www.epa.gov/sites/production/files/2016-04/documents/final\\_2016\\_nwp\\_climate\\_workplan.pdf](https://www.epa.gov/sites/production/files/2016-04/documents/final_2016_nwp_climate_workplan.pdf)

Plan implementation sometimes doesn't occur until years after a plan is developed. The EPA's National Water Program published a document outlining strategies in response to climate change in 2008. The plan was further re-fined and updated in 2012. Now, in 2016, the NWP issued an implementation plan to address specific action items in managing U.S. water resources. Water management is a critical element of any climate change action plan, and this document's national framework can be adapted to local strategies.

### **Region – Midwest**

Drennen, Thomas and Harry M. Kaiser. (1993). *Agricultural Dimensions of Global Climate Change*. Boca Raton, Florida: St. Lucie Press.

This book focuses on the impact climate change will have on Missouri, Iowa, Nebraska and Kansas. Many cities in the region we are interested in rely on agriculture as a large part of their economy. This book looks at the impacts climate change will have on agriculture and can be used to help develop an action plan that is prepared for the impacts.

Erickson, Jim. "Climate Change to Profoundly Affect the Midwest, New Report Says | University of Michigan News." *Climate Change to Profoundly Affect the Midwest, New Report Says | University of Michigan News.*, 18 Jan. 2013. Web. 07 July 2016.

This article, published from the University of Michigan, outlines the findings from the National Climate Assessment related to the overall changes in weather patterns that are likely to occur in the coming years throughout the Midwest. From increased heat waves to more frequent flooding, these changes are presented as extreme threats that will be felt by those living in dense urban areas, rural communities, and everywhere in-between.

Hayoe, Katharine, Jeff VanDorn, Vaishali Naik, and Donald Wuebbles. *Climate Change in the Midwest: Projections of Future Temperature and Precipitation*. [http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global\\_warming/midwest-climate-impacts.pdf](http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/midwest-climate-impacts.pdf)

Recent changes in the Midwest climate are consistent with those expected due to increase in atmospheric greenhouse gas concentrations. This analysis looks into two scenarios of emissions in depth.

MARC. ENERGY CALCULATOR." *Beyond The Bulb*. Mid-America Regional Council, n.d. Web. 10 June 2015.

This interactive resource provides members of the public, as well as decision-makers, with an "Energy Calculator" that empowers homeowners and renters to save money (cobenefit!) while working towards a more sustainable planet. This tool could be listed in a CAP and could be incorporated to contests and other public outreach techniques to increase energy use awareness. Additionally, this tool provides contractors with information on energy efficiency certifications.

MARC "Plans & Studies." *Plans & Studies - Environment*. Mid-America Regional Council, n.d. Web. 10 June 2015.

This resource page provides various environmental plans and studies for the Kansas City region. They can serve as a model for future CAPs in the general geographic area. MARC's environmental initiatives involve air quality, energy, green networks, natural resources, solid waste management, forestry, and water quality. Best practices are mentioned for the various topics.

National Oceanic and Atmospheric Association. (2013). "Regional Trends and Scenarios for the U.S. National Climate Assessment: Part 3." Climate of the Midwest U.S. Retrieved from: [http://www.nesdis.noaa.gov/technical\\_reports/NOAA\\_NESDIS\\_Tech\\_Report\\_142-3-Climature\\_of\\_the\\_Midwest\\_U.S.pdf](http://www.nesdis.noaa.gov/technical_reports/NOAA_NESDIS_Tech_Report_142-3-Climature_of_the_Midwest_U.S.pdf)

A technical report on the climate of the Midwest. Not for the layman but full of information. It presents in detail the current climate of the area based on extensive historical data and then presents future climate scenarios based on greenhouse gas emission levels.

Pryor, S. C. *Climate Change in the Midwest: Impacts, Risks, Vulnerability, and Adaptation*. Bloomington: Indiana UP, 2013. Web. 7 July 2016.

Released from the University of Indiana, this book is a comprehensive look at the impacts, risks, and vulnerabilities associated with climate change in the Midwest, as well as the necessary adaptation procedures. A very important feature of the paper is the vulnerability section that outlines where the communities are the weakest, such as energy infrastructure and water usage. Throughout the 17 chapters Pryor provides a very detailed examination of what the future may hold for those living in the Midwest as well as recommendations on how to ensure a sustainable future.

Region 7 Climate Change Adaptation Implementation Plan. June 2013. US EPA region 7 WebPage: <https://www3.epa.gov/climatechange/Downloads/impacts-adaptation/region-7-plan.pdf>

Region 7 of the EPA includes the states of Kansas, Missouri, Nebraska, and Iowa. This draft provides scientific evidence demonstrates that the climate is changing at a rapid rate. This plan identifies specific priority actions that the office will take to begin addressing its vulnerabilities and mainstreaming climate change adaptation into its activities.

Spross, Jeff. "The Impact Of Climate Change On The Midwest: More Heat ..."  
*Thinkprogress.com*. N.p., 7 May 2014. Web. 7 July 2016.

This article from thinkprogress.com provides numerous graphs and info graphics that outline numerous measurements such as an increase in temperature, rates of precipitation, and other weather patterns and their effect on crop yields. Being more image oriented, this article offers clear understanding of the weather patterns and the effects that are likely to effect that agriculture industry without adequate adaptation procedures.

Staudinger, Michelle, Toni Morelli, and Alexander Bryan. "Integrating Climate Change into Northeast and Midwest State Wildlife Action Plans." *Evaluating Climate Change Action Plans* (2015): Print.

This article is helpful in breaking down climate change into specific elements of weather that are not always addressed, such as wind and atmospheric moisture. The article then breaks down then from the region of the entire northeast and Midwest into sub-divisions, such as the Great Lakes and the Atlantic Coast. They provide an environment understanding of the impacts of wildlife. They also provided the information in a clear and easy way to understand through lists and diagrams, as well as full text.

The White House, Office of the Press Secretary. (2014, May 6). *Fact Sheet: What Climate Change Means for the Missouri and the Midwest*.  
[https://www.whitehouse.gov/.../MISSOURI\\_NCA\\_2014.pdf](https://www.whitehouse.gov/.../MISSOURI_NCA_2014.pdf)

This is another resource to identify specific areas of concern in regard to climate change for Missouri. It also gives ideas of how to reduce carbon emissions and offset impacts and also gives examples of some efforts currently underway to address climate change in the area.

Thomson, A.M., et al. (2014). "The contribution of future agricultural trends in the US Midwest to global climate change mitigation." *Global Environmental Change* 24.

Generally, studies about climate change focus on modeling the impacts of climate change, rather than the impacts of mitigation measures. This article analyzes different agricultural management practices (specifically food crops versus bioenergy) in the context of climate change mitigation, noting how different regions benefit from different mitigation practices. It may be rather dense/jargony for the layperson, however, for the policymaker who is interested in agriculture, the crop management techniques listed here will be helpful.

United States Environmental Protection Agency. (2013). *Climate Change- Midwest*.  
<http://www.epa.gov/climatechange/impacts-adaptation/midwest.html>

This website gives detailed information on how climate change will impact Midwestern cities, including Kansas City. In the Midwest, climate change will have the greatest impacts on human health, water resources, agriculture, forests and other ecosystems. This website also gives examples of adaptation strategies that some cities in the Midwest are already using.

United States Environmental Protection Agency. "Climate Impacts in the Great Plains."  
<http://www.epa.gov/climatechange/impacts-adaptation/greatplains.html#water-resources>

Here we have a standard EPA website--it provides broad information about the major climate impacts for the Great Plains region, focusing on water resources, agriculture, ecosystems and vulnerable populations. While it is not incredibly substantive, it offers a good framework for understanding the Midwest's specific climate issues, and can help direct a policy maker toward more information regarding water resources and agriculture. My main criticism: the references are outdated and there are a couple of broken links. Still, a good jumping off point for context and future research.

Winter, Jonathan M., Pat J.-F. Yeh, Xiaojing Fu, and Elfatih A.b. Eltahir. "Uncertainty in Modeled and Observed Climate Change Impacts on American Midwest Hydrology." *Water Resources Research Water Resource. Res.* 51.5 (2015): 3635-646. Web.

This article describes the projected changes that are likely to occur to the water cycle throughout much of the Midwest as a result of climate change. Because most Midwest states rely heavily on agriculture as an economic resource this potential water scarcity presents various challenges and threats for the near future. It is essential that planners address these challenges appropriately in order to properly adapt to the changing climate and this paper provides valuable information to do just this.

Winkler, Julie A., Jeffrey A. Andresen, Jerry L. Hatfield, David Bidwell, and Daniel G. Brown. *Climate Change in the Midwest: A Synthesis Report for the National Climate Assessment*. Washington: Island, 2014. Print.

This report was helpful and full of information that came from the Climate Change Assessment, and many additional reports and sources, that then is placed with a soul focus on the Midwest. This becomes helpful when focusing on the Midwest, because you are only dealing with information on issues that will directly impact the Midwest such as the impacts on agriculture, which is vital to the economy in the Midwest, and the impacts to water and its surrounding infrastructure, along with additional impacts and initiatives to deal with them.

## State – Illinois

Baylis, Kathy, Tatyana Deryugina, Don Fullerton, Megan Konar, and Julian Reif. "Preparing for Climate Change in Illinois: An Overview of Anticipated Impacts." *Climate Change Policy Initiative* (2015): Print.

This article is addressing climate change planning in the Midwest, placing the main focus on Illinois. Noticing the effects that climate change is having, and will have on the coming decades in Illinois have and will continue to help guide their climate action plans, but can help guide the plan of those that are similar. This article is useful in creating climate plans for Kansas and Missouri because Illinois has cities that are very comparable in infrastructure, economy, environment and population.

### **State – Iowa**

Villarini, Gabriele, and Aaron Strong. (2014). "Roles of climate and agricultural practices in discharge changes in an agricultural watershed in Iowa." *Agriculture, Ecosystems & Environment* 188.

Yes, this is a study set in Iowa, not Kansas or Missouri. Yet, it focuses on one of the major potential impacts for the Midwest: water resources. Inconsistent rain patterns are a trademark of Midwestern climate, and our natural environments have adapted to withstand both drought and torrential downpours, yet with agriculture, increased built environment, and land use patterns, the natural qualities of our environment to withstand inconsistent rain patterns are less effective. Climate models suggest that these extremes are only going to increase with global warming. It does not say anything shocking, but it does provide valuable, compelling information about the potential magnitude of variable discharge flows, and the impacts for agriculture, land use and the built environment.

### **State – Missouri**

Freese, Barbara, Bryan Wadsworth, Rouwenna Lamm, and Melanie Fitzpatrick. "Confronting Climate Change in the U.S. Webpage: [Mhttp://www.ucsusa.org/sites/default/files/legacy/assets/documents/global\\_warming/climate-change-missouri.pdf](http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/climate-change-missouri.pdf)idwest: Missouri." Union of Concerned Scientists. July 2009.

Analysis is based on research conducted by Katharine Hayhoe of Texas Tech University and Donald Weubbles of University of Illinois. This publication reviews the effects of carbon dioxide from human activity in the atmosphere in Missouri. The paper analyzes two possible futures of Missouri; one with a lower level of global warming pollution and the second with a higher lever of global warming. It provides effective and affordable solutions.

Guinan, Pat. "Missouri Climate Center." *Missouri Climate Center*. Web. 07 July 2016.

The Missouri Climate Center website provides an additional in-depth review of the existing conditions throughout Missouri and the changes that are likely to occur in the

coming years. This is a valuable resource because it focuses entirely on Missouri. By outlining clear climate data that relates to long term climate and changes in weather patterns with specific measurements throughout the state the Missouri Climate Center makes it very easy to form conclusions about the necessary steps for climate change adaptation.

Union of Concerned Scientists. (2009). *Confronting Climate Change in the U.S. Midwest: Missouri*. Retrieved from:  
[http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global\\_warming/climate-change-missouri.pdf](http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/climate-change-missouri.pdf)

This report details climate change risks for the state of Missouri. It is well-organized, easy to understand, and offers easy to interpret figures to illustrate key points. Threats are divided into several categories including temperature, precipitation, and agricultural. The report is specific to the state of Missouri, however, there are reports for other states on the website provided at the end of the document.

## State – Kansas

Brunsell, N. A.: 2008, Trading carbon for water: assessing climate change in Kansas. KU Commons: University Lecture Series. University of Kansas. Lawrence, KS.

The importance and usefulness of this document is that it uses all of the data and graphs in more technical papers but puts it in a very readable, understandable context. So it's got Mauna Loa temperature data and sea level change but it is made easier to digest for a lay audience.

Horin, Colleen, Daraius Irani, Natalia Parra, Kim Ross, Matthias Ruth. (2008). "Economic Impacts of Climate Change on Kansas" *The Center for Integrative Environmental Research, University of Maryland*. [www.cier.umd.edu/climateadaptation](http://www.cier.umd.edu/climateadaptation)

This report is part of a larger study on climate change in the United States. The Kansas report gives current and predicted climates for the state and a history of climate in Kansas. The main focus of the report is how climate change will impact industry and economy within the state.

Kansas Coal Plants [http://www.kansasenergy.org/coal\\_projects.htm](http://www.kansasenergy.org/coal_projects.htm)

In order to craft an adequate assessment of GHG emissions, it is necessary to locate and evaluate the power plants. This tool is a simple map, with emission amounts and types. When looking at a city from the outside, it is necessary to assess the surrounding elements that may increase risk and also possible adaptation strategies that are being initiated.



Kansas Experimental Program to Stimulate Competitive Research, (Kansas EPSCor). (2010, November) *Climate Change and Mitigation*. Retrieved from: [http://www.nsfepscor.ku.edu/pdf/20101004\\_Rice.pdf](http://www.nsfepscor.ku.edu/pdf/20101004_Rice.pdf)

This document is funded by the NSF, a nationally recognized reputable scientific group but utilizes Kansas-specific data, Kansas scientists and directly describes the effect of climate change on agriculture in our state. It also addresses adaptation strategies, not just data.

National Conference of State Legislatures. (2008). *Assessing the Costs of Climate Change: Kansas*.

This is a glossy climate change brochure created for administrators. It addresses tornadoes, flooding, tourism—encourages planning for adaptation. Very wishy-washy about quantifiable effects in public health. Not quite sure why but this is an interesting template that I can see being utilized by municipal staff easily.

Yasarer, Lindsey, Belinda Sturm, and Stacey White. "Climate Change and Kansas Water Management: Perspectives and Opportunities." *BioOne*. N.p., n.d. Web. 09 July 2016.

This paper is a helpful resource in planning for climate change because it summarizes the results from a survey given to planners and decision makers in state agencies to better understand the steps that can be taken in order to most sustainably manage water, as well as the barriers that have prevented proper water management in the past. Because water is such a key part of the economy in Kansas, understanding proper water management techniques and how to put them in place is essential to creating a long term plan that operates sustainably.

### **State – Ohio**

National Wildlife Foundation. (2014). *Using Urban Forests to Help Communities Prepare for Climate Change in Northeast Ohio*. Retrieved from: <http://www.nwf.org/~media/PDFs/Global-Warming/2014/NWF-urban-forestry-and-CC-in-Ohio.pdf>

Although this pamphlet is focused on NE Ohio, the information is applicable to Eastern Kansas. All municipalities will have to look at their urban forests as valuable carbon sinks. As well, changing climates will affect urban forests, causing massive die-outs in some cases. Municipalities will need to be prepared fiscally to deal with this.

### **State – Utah**

Spencer, M., Stemberge, E.S.B., & Phillips, L.U. (n.d.). *Climate change and public health in Utah*. Prepared by the Environmental Epidemiology Program at the Utah Department of Health,

**Local**

Helling, Dave. (2015, November 17). Rain, wind, heat: Cities prepare for a changing climate. *The Kansas City Star*. Retrieved from: <http://www.kansascity.com/weather/article45290901.html>.

Dave Helling, a writer for the Kansas City Star (the largest newspaper and media source in the Kansas City area), outlines the issues facing the city in relation to climate change. Many common subjects are touched on; heat waves, flooding, extreme weather but the article also goes into more depth than usual on less talked about subjects: health due to allergies and bugs and public safety due to increased violent crime and threats to poor citizens. The political quagmire that is climate change is also addressed and many points of opposition and obstacles are highlighted.

Climate Protection Plan, City of Kansas City, Missouri, July 2008.  
Webpage: <http://kcmo.gov/citymanagersoffice/wp-content/uploads/sites/11/2013/11/City-Climate-Protection-Plan.pdf>

Kansas City believes that greenhouse gas emissions can be reduced at the same time as the economy and quality of life improve for citizens. The plan is an example how a city can develop its own plan to deal with climate change.

Greenability Magazine. (2015). KC Ranks 5<sup>th</sup> of cities to be most impacted by climate change. Retrieved from: <http://greenabilitymagazine.com/blog/2015/07/kc-ranks-5th-of-cities-to-be-most-impacted-by-climate-change/4/>

Greenability Magazine, citing a Weather Channel report in which Kansas City is ranked 5<sup>th</sup> of all American cities to be most impacted by climate change, discusses the factors influencing the ranking as well as adaptation and mitigation strategies for the city. Heat waves, the urban heat island effect and increased extreme weather phenomena are the most prominent types of hazards discussed.

Kansas City Environmental Management Commission. (2006, November). *Kansas City Climate Protection Research and Recommendations for a Comprehensive Planning Process*. City Manager's Office, City of Kansas City, Mo. <http://kcmo.gov/citymanagersoffice/climate-protection-plan/>

This report was developed by the Kansas City Environmental Management Commission to guide the development of a Climate Plan for the City. The report identifies the areas that need to be included in a plan, including transportation and land use, efficiency in the built environment and carbon emissions. Although this report is specific for Kansas City, it can also be useful when considering surrounding areas facing similar issues.

Kansas City Environmental Management Commission. (2006). Climate Protection Report. Retrieved from: <http://kcmo.gov/citymanagersoffice/wp-content/uploads/sites/11/2013/08/EMC-Climate-Protection-Report.pdf>

The Kansas City Environmental management Commission published this document in November of 2006 in an effort to establish a framework for adaptation to and mitigation of climate change. The document touches on subjects from policy decisions, land use practices and examples from other areas that can serve as a good frame of reference for building local plans. Issues and solutions are presented in a clear and understandable manner and could be used as an example for other cities and metropolitan regions with similar circumstances.

Kansas City, Missouri. (2008). *Climate Protection Plan*. <http://kcmo.gov/citymanagersoffice/wp-content/uploads/sites/11/2013/11/City-Climate-Protection-Plan.pdf>

This is Kansas City's climate action plan. Although pretty outdated, it indicates the priorities of a large Midwestern city, and provides one example of how to organize a CAP.

Portland Bureau of Planning and Sustainability Commission. (2015). *Climate Action Plan*.

Here we have an update to a very strong climate action plan. Portland is known for its planning, and attention to issues of climate change and sustainability. When looking for examples of strong CAPs, this one is high on the list. Note its attention to equity! This is rare and exciting (16 whole pages on the subject).

Salt Lake City, UT. Retrieved from:

<http://health.utah.gov/enviroepi/publications/Climate%20Change%20Booklet%20WEB%20compressed.pdf>

Because the impacts of climate change can have serious detrimental effects on health, the Utah Department of Health created a document to help practitioners, policy makers, and individuals understand the health threats. The report divides the state of Utah into seven different climatic regions and provides customized climate change and hazard information on each region. Although the graphs and some of the data sets are specific to Utah, the information and suggestions can be readily adapted to other localities.

“Integrating Hazard Mitigation and Climate Adaptation Planning: Case Studies and Lessons Learned”. For the 2015 San Diego County Multi-Jurisdictional Hazard Mitigation Plan Update. ICLEI-Local Governments for Sustainability USA, February 2014. <http://www.icleiusa.org/library/documents/integrating-hazard-mitigation-and-climate-adaptation-planning/n.d>. Web. 11 June 2015.

This research seeks to uncover approaches and best practices for integrating climate change adaptation and hazard mitigation planning. This report first provides an overview

of frameworks for hazard mitigation planning and climate adaptation and discusses their similarities and differences. Next, the report provides case studies on the few other communities across the country that have integrated climate adaptation and hazard mitigation planning. The cases highlight the approach that local governments have taken to integrate these two frameworks and what challenges and successes they encountered in the process. The purpose of these case studies is to draw lessons from these experiences that may inform the design of technical assistance and stakeholder engagement.