

Bridging the Gap: Toward a National Framework for Local Climate Adaptation

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Introduction

The way we live is being shaped by climate change. From more intense hurricanes and deadly heatwaves to rising sea levels and devastating wildfires, communities throughout the United States are experiencing the impacts in real time. Communities have been displaced, air quality has deteriorated, and critical infrastructure is constantly under risk. Adapting to these changes is not optional, and cities must be prepared to safeguard their communities from these potential hazards.

Adapting to climate change is not a one-time initiative. It is a long-term commitment that requires consistent monitoring and evaluation, as well as regular updates based on evolving climate science and projections. And yet, even as the need for action is clear, the path forward is unclear. At the moment, there is no national framework that guides cities on how to successfully adapt to changing climate. Some cities possess resources, political will, and data necessary to take the lead. Others are trying to make the best of what they have. Consequently, adaptation efforts vary widely throughout the nation. Some climate action plans are thoughtful and comprehensive, while others are ambiguous or simply nonexistent when it comes to climate adaptation contents. While efforts differ, the climate crisis does not. The impacts are widespread and unrelenting, regardless of how prepared a city may be.

The disparity of the cities' preparedness has only become more urgent considering recent federal decisions. In January 2025, President Trump declared a presidential action to immediately withdraw the United States from the Paris Agreement (The White House, 2025). This is the second time the U.S. has taken this step, after the initial withdrawal in 2016. Since then, many cities have attempted to act on climate change on their own by implementing new policies and launching local adaptation programs (*One Year After Trump Decision*, 2018).

Although the absence of federal leadership ultimately motivated cities to step up, it took many months and years for local governments to fully respond. This demonstrates how vulnerable cities can be in the absence of a stable, national framework to direct and encourage prompt climate action.

This paper explores the following research question: *How do current city-level climate change adaptation plans align with (or deviate from) the fundamental principles identified in the literature on climate change adaptation, and what would it take to establish a national framework that helps cities tackle the challenge?* In other words, how can we move from a patchwork of fragmented, uneven efforts to a more coordinated approach?

To answer this question, this paper reviews 14 U.S. cities' climate action plans that contain adaptation strategies. These cities vary in geography, population, and capacity. Their plans are evaluated using eight fundamental principles drawn from academic and policy literature. The goal of this study is to provide a clear picture of how city-level climate adaptation efforts currently align with best practices today and to provide a pathway toward more consistent, effective, and equitable climate action across the country. It will inform and benefit local, state, and national policymakers; government officials designing and implementing adaptation strategies; and climate advocates working to strengthen resilience on the ground.

Literature Review

What is adaptation and why is it important to have an adaptation plan?

Definition of Climate Change Adaptation

The United Nations Framework Convention on Climate Change (UNFCCC) defines adaptation as “adjustments in ecological, social or economic systems in response to actual or exceeded climatic stimuli and their efforts” (Adaptation and Resilience, n.d.). The

Intergovernmental Panel on Climate Change (IPCC) defines it similarly as “the process of adjustment to actual or expected climate and its effects in order to moderate harm” in human systems (IPCC, 2022).

Importance of Adopting Adaptation Plan

It is important for a government entity to have an adaptation plan that is to be successful because successful adaptation is “any adaptation that reduces the risks associated with climate change, or vulnerability to climate change impacts, to aprecedented level, without compromising economic, social, and environmental sustainability” (Doria et al., 2009). The importance of developing adaptation planning also has to do with the fact that it outlines clear “actions to limit the negative consequences of climate change” (Woodruff et al., 2022).

It is also essential to adopt a successful climate change adaptation because mitigation efforts alone are not sufficient. Global society has recognized the limitations of climate change mitigation over the last two decades. Climate change mitigation focuses on reducing greenhouse gas emissions in the atmosphere, which entails a range of actions from a different approach than adaptation. Global greenhouse gas emissions have not been significantly curtailed, although policy efforts, both globally and nationally, were heavily focused on extensive mitigation. This is evident from the climatic pattern changes in every corner of the world where catastrophic consequences are already experienced (IPCC, 2007). As mitigation efforts have proved to be insufficiently effective to cope with the negative impacts of climate change, it becomes key to adopt adaptation schemes at all levels of government, and particularly at the national level.

The importance of adopting adaptation plans is growing as it becomes increasingly challenging for individuals, organizations, and societies to fully address the impacts of climate change (Bauer et al., 2012). As the pace of the current global climate change is unprecedented

and autonomous, self-regulated, voluntary adaptation is simply not enough with increasing complexity of the modern societies (Berkhout, 2005). During this time of climate crisis and complexity, comprehensive and coordinated adaptation action requires active governmental intervention (Adger, 2003; Kahn, 2003; Nelson et al., 2007).

How do national adaptation frameworks differ across developed countries?

While not required under UNFCCC, many developed countries have established frameworks at the national level for addressing the expected impacts of climate change. Such frameworks differ across countries, depending on their governance systems, policy priorities, and regional vulnerabilities. The commonality, however, is that they recognize the urgency of climate change adaptation and have overarching adaptation framework on the national level.

In Australia, the federal government is responsible for national leadership on adaptation and oversees the management of government assets. It also focuses on supporting vulnerable populations through social safety nets that address disproportional impacts. Adaptation efforts are trickled down to lower levels of government where, for example, state and territory governments are implementing adaptation through planning laws as well as investments in infrastructure, such as emergency services, transport, and public health (DAWE, 2021). It is the local governments that ensure that the local needs are met, while higher levels of government are informed of the realities faced at the frontline of climate impacts. It is further supported by the Australian government's establishment of National Adaptation Policy Office to lead efforts, improve coordination, and serve as the central office for communities to engage in the adaptation actions (DAWE, 2021). This decentralized, but vertically integrated approach encourages coordination and communication across governments and sectors to ensure the effective implementations.

Germany has recently improved its adaptation dramatically by passing its new Climate Adaptation Law, which came into force in July 2024. This law mandates the federal and state governments to elaborate on climate risk assessments and to take measures regarding the impact of climate change, such as heavy rainfall, heat waves, and flooding. Germany's actions and measure for climate adaptation are specified in the Climate Adaptation Strategy which includes legally binding, measurable targets for adaptation across sectors, including health, infrastructure, urban development, water management, and the economy (Kyllmann, 2024). This strategy was developed with input from all ministries. The Climate Adaptation Strategy aims to unify adaptation initiatives, in addition to the stands in place since 2008.

The United Kingdom's third National Adaptation Programme (NAP3) goes further than its predecessors by setting out the approach for how the country will tackle existing and future climate risks with a view to completely adapting the country to acknowledge the climate impacts that we are aware of. The three main theme of actions, information, and coordination provides the government with individual aims of incorporating adaptation into decision-making, greater coordination across government departments, and more emphasis on action-oriented outcomes over the next five (Department for Environment, Food & Rural Affairs, 2023). NAP3 tackles climate risks both at the national and local levels, with quantifiable metrics focusing on urban development, infrastructure, public health, and other key sectors. This was accompanied by an extension of the Adaptation Reporting Power, which placed a legal obligation on certain categories of organizations and local authorities to report how they are adapting and what they are achieving. It ensures local efforts work towards accomplishing the shared national goals. The UK government also allocates funds toward research institutions to gather scientific evidence of climate change that is fundamental for evidence-based decision-making and policy

implementations (Department for Environment, Food & Rural Affairs, 2023).

What is the US government's stance on climate adaptation?

Unlike most developed countries, the United States does not have a cohesive, cross-departmental framework for adaptation. In the U.S., climate adaptation initiatives have been fragmented, with responsibilities distributed among federal, state, and local levels. The lack of a unified national strategy also means that adaptation measures vary widely, depending on the administration and political priorities in charge.

The political leadership in the United States has significantly shaped the country's approach to climate adaptation, with varying degrees of focus and commitment based on who occupies the office. While there is no comprehensive national system of climate adaptations across the U.S., there have been some significant actions taken by the government under several administrations to deal with climate impacts.

The U.S. made significant progress under President Obama toward responding to climate change adaptation. He issued Executive Order 13653 with his administration in 2013. This galvanized a national coalition to combat climate change, and it united various levels of government toward incorporating climate resilience into decision making (Lavelle, 2016). The order also established the Council on Climate Preparedness and Resilience, which directed federal agencies to determine the specific actions needed to increase the resilience of U.S. ecosystems, communities, and economies to the impacts of climate change (Obama, 2013). However, even these efforts did not match the Obama administration in regional and local priorities (Lavelle, 2016). The election of President Trump resulted in significant rollbacks of climate policy enacted during the past administration (Lavelle, 2016).

Trump's administration focused on deregulation and withdrew the U.S. from the Paris

Agreement in 2017. Federal action was limited on climate adaptation and policies were rolled back during this time, including the elimination of the Clean Power Plan and the cuts in vehicle emission standards (Craig, 2022). This departure from international agreement and, subsequently, a more hands-off approach to adaptation led to a shift towards more de-centralized and dis-organized adaptation action, effectively leaving a lot of responsibility to individual states (McGrath, 2020; Craig, 2022). Trump's presidency had no coherent federal approach to adaptation, mirroring the piecemeal nature of U.S. climate policy. There are already more coordinated processes for climate adaptation in the Biden administration.

The climate adaptation concerns of President Biden were the impetus for his rejoining of the Paris Agreement; through Executive Orders 13990 and 14008, he reaffirmed the commitment of the federal government to addressing climate impacts through both mitigation and adaptation (2021a; 2021b). The first was Executive Order 14008 which instructed federal agencies to create and implement plans to adapt to climate impacts and to increase resiliency of operations, infrastructure, and communities across government (Biden, 2021b). The plans centered on addressing the risks from extreme heat, flooding, and sea level rise, and, also on addressing climate justice and engaging with marginalized communities (White House, 2021).

What are the key principles for a good adaptation plan?

The literature review on climate change adaptation plans and their assessment typically highlights the following eight key principles:

Clear and Measurable Goals

Goals, visions, or objectives that will lead to the intended future outcomes should be clearly stated in adaptation plans (Berke & Godschalk, 2009; Reckien et al., 2023; Woodruff et al., 2022; Woodruff & Stults, 2016). Adaptation plans should pursue clear goals, visions, and

objectives of what the desired future outcomes will be for the plan. These goals are the strategic foundation of the plan. Goals should also be quantifiable and measurable so that their accomplishments can be compared and benchmarked in the implementation stage of the plan. Setting clear goals and objectives orients the purpose of the plan and its measurable actions.

Fact Base

Adaptation plans should study the current conditions and future risks based on scientific facts and evidence. Fact-based studies including vulnerability and risk analyses, and climate change risk exposure assessments, with reliable data sources are essential components of a good adaptation plan. This ensures that adaptation strategies are relevant to local realities through the integration of climate projections and profound risk analysis. Adaptation methods can be set to be more reflective of local conditions by incorporating climate projections and risk assessments (Chen et al., 2016; Doria et al., 2009; Woodruff et al., 2022). In doing so, spatial analysis and using climate data become critical in carving out priority areas for adaptation (Stone, 2024, slide 29).

Strategies to Achieve Goals

The adaptation strategies have to be aligned with the identified objectives. Adaptation strategies must include practical, actionable solutions, such as capacity-building, green infrastructure, land use changes, and promote sustainable practices (Doria et al., 2009; Reckien et al., 2023; Woodruff et al., 2022).

Public Participation and Climate Justice

Stakeholder participation in climate adaptation planning is necessary for inclusiveness and appropriately meeting stakeholder needs. It needs transparency and a clear description of how to involve stakeholders as all levels, from local communities and businesses to

governmental and non-governmental agencies (Woodruff et al., 2022).

There is growing recognition that climate adaptation planning must incorporate social justice perspective. The plan should recognize and respond to the disproportionate impacts of climate change on marginalized communities (Owen, 2020; Singh et al., 2022).

Interorganizational Coordination

Climate adaptation works well when local governments engaging with private sector partners, non-profit organizations, and research institutions collaborate. This enables inter-organizational coordination to reduce duplication of efforts, encourage knowledge sharing and aligned actions across sectors (Woodruff et al., 2022). With a well-coordinated approach, the capacity of the organizations can be fully utilized towards achieving adaptation goals.

Implementation and Monitoring

How strategies will be implemented and monitored should be clearly articulated in adaptation plans (Reckien et al., 2023). This means that the clear-cut responsibilities of the stakeholders, timelines for planned actions, as well as funding for actions must be implemented. Effective design of monitoring mechanisms should ensure tracking of the progress of the implementation in regards to the plan goals and allow for a change against unexpected changed (Woodruff et al., 2022). Necessary also for sustained success of adaptation activities is a strong monitoring and evaluation framework (Stone, 2024, slide 29).

Addressing Uncertainty

The uncertainties are part of climate change itself, and successful adaptation plans will embrace them. This is accomplished by forecasting potential future impacts over several climate scenarios and incorporating strategies that provide benefits across output scenarios. It also seeks to use predictive models and multiple climate projections to comprehensively assess future risks

(Woodruff et al., 2022). The adaptation framework should be easily revisitable and the strategies flexible across diversifying future scenarios (Chen et al., 2016; Stone, 2024, slide 29; Woodruff et al., 2022).

Financing Mechanism

A number of practical reports underscore the need to address the financing of the adaptation plans. Finance of the adaptation plan can include the costs of adaptation actions, the costs of inaction, the financing gap, potential funding sources, a finance mobilization strategy, and financing tracking system. In order to make the plan stick, it is important to recognize the financial shortfalls to tackle the implementation of the plan. Tackling finance needs enables targeted resource mobilization plans that strengthen access to the most relevant funding resources and financing mechanisms for adaptation actions included in the plan.

Methodology

This section outlines the approach used to assess how city-level climate plans of the U.S. cities reflect the key fundamental principles that make for strong and effective planning. First, a group of climate action plans that explicitly address adaptation strategies were selected. Then, each plan was evaluated using a matrix of criteria based on best practices principles extracted from the literature review. The matrix was adapted from the Global Green Growth Institute (GGGI)'s National Adaptation Plan Good Practice (NAP-GP) Framework. The evaluation questions were modified to reflect the key principles identified in the literature.

Selection of Climate Action in U.S. Cities

The city-level plans were selected based on the following criteria:

- The plan includes a standalone chapter or section that explicitly addresses adaptation that juxtaposes with mitigation.

- The plan contains strategies or themes primarily targeted at adaptation benefits rather than mitigation.
- The population of the city is over 500,000 in 2023.

The name of these plans varies across cities, although these plans are typically referred to as Climate Action Plans (CAP). If a city had a separate adaptation plan as a supplementary document to its CAP, the adaptation document was selected to review for this study, since it provides more detailed information relevant to be reviewed.

The table below lists the climate action documents reviewed including the city, state, year and the title of the document. The study examines a total of 14 cities across 10 states. The published year of the selected plans ranges from 2012 to 2024.

Table 1. List of Selected Climate Action Plans

	City	State	Year	Title	Population (in thousands)
1	Albuquerque	New Mexico	2021	Climate Action Plan	560
2	Baltimore	Maryland	2012	Climate Action Plan	565
3	Chicago	Illinois	2022	The Chicago Climate Change Action Plan	2,664
4	Columbus	Ohio	2021	Columbus Climate Action Plan	913
5	Dallas	Texas	2020	Dallas Comprehensive Environmental and Climate Action Plan	1,303
6	Jacksonville	Florida	2023	Resilient Jacksonville	985
7	Phoenix	Arizona	2021	Climate Action Plan	1,650
8	Philadelphia	Pennsylvania	2021	Philadelphia Climate Action Playbook	1,551
9	Portland	Oregon	2022	Climate Emergency Workplan 2022-2025	630
10	Sacramento	California	2024	2024 Final Climate Action Plan	526
11	San Antonio	Texas	2019	SA Climate Ready: A Pathway for Climate Action & Adaptation	1,495
12	San Diego	California	2024	Climate Resilient SD	1,388
13	Tucson	Arizona	2023	Tucson Resilient Together Climate Action and Adaptation Plan	547
14	Washington, D.C.		2020	Climate Ready DC	678

Matrix for Evaluating Climate Adaptation Plans

Based on key principles of good climate adaptation plans identified in the literature, a matrix was developed to assess the 26 climate action plans. The evaluation criteria and corresponding matrix questions were drawn from the National Adaptation Plan Good Practice (NAP-GP) Framework developed by the Global Green Growth Institute (GGGI) and modified so that they align with key principles identified in the literature and are relevant to assess city-level climate plans.

The matrix consists of 26 questions across eight criteria. Each selected plan is assessed using a binary scoring system. If a plan meets the criterion, the value of 1 will be assigned, otherwise, 0. The total possible score for a plan is 26 points. A binary scoring system was chosen, over other rating methods such as Likert scales or weighted scoring, to minimize subjective interpretation in the evaluation process. Therefore, all 26 questions are equally weighted, although I acknowledge the limitation of a binary scoring system oversimplifying complex strategies of a plan.

Table 2. Good Practice Criteria and Scoring Matrix Questions.

Good Practice Criteria	Matrix Questions
Clear and Measurable Goals	Do goals, visions, or objectives in the plan outline desired future outcomes?
	Are adaptation goals presented in a quantifiable and measurable manner?
	Do adaptation goals include time-bound actions?
	Are the adaptation goals connected to specific impacts/risks of climate change?
Fact Base	Does the plan study current conditions based on relevant scientific facts and evidence?
	Was the vulnerability/risk analysis conducted as part of the planning process?
	Does the plan address future climate hazards?
	Does the plan integrate local climate projection?
	Does the plan incorporate spatial analysis to map vulnerable regions?
Strategies to Achieve Goals	Does the plan identify vulnerable sectors?

	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)
Public Participation and Climate Justice	Does the plan identify certain communities and groups that will be particularly affected by future impacts?
	In the planning process, was community engagement conducted?
	Does the plan address the disproportionate impacts of climate change on marginalized communities?
Interorganizational Coordination	Does the plan include strategies to enhance coordination across government agencies?
	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?
Implementation and Monitoring	Does the plan outline adaptation actions for implementation?
	Does the plan identify responsible parties and their roles?
	Does the plan establish timelines for planned actions?
	Does the plan include monitoring and evaluation objectives?
Addressing Uncertainty	Does the plan address uncertainties in future projections?
	Is the plan designed to be easily revised?
	Are the strategies flexible for changes in future scenarios?
Finance	Does the plan identify the potential costs of implementing the identified adaptation actions?
	Does the plan identify financing gaps in implementation?
	Does the plan identify potential funding sources to implement the plan?

Modified from Global Green Growth Institute. (2024). *Identifying Good Practices in National Adaptation Plans: A Global Review*. https://gggi.org/wp-content/uploads/2024/09/GGGI_NAP_GP10.04.24-1.pdf

Results

The following section presents results from the application of a 26-question scoring matrix to evaluate 14 climate adaptation plans at the city level. The plans were scored from 0 to 26 based on whether they included specific good practice criteria. Results are presented in three parts: 1) overall ranking, 2) descriptive statistics, and 3) scores by criteria category.

The chart below shows the plans ranked by their evaluation scores. Scores are translated to a 100-point scale and each score is rounded to the nearest whole number for readability. Exact values are provided in the accompanying table.

The mean score for all 14 plans combined was 58.6 out of 100 (weighted and scaled to 100). This means that while some cities show significant gains towards best practices, almost

60% are still lagging and fall well short of a robust, integral approach towards climate adaptation. The highest-scoring plan received 85.4, and the lowest was 21.9. Two plans scored above 80% and seven plans scored below 60%.

Dallas scored the highest among all cities, earning a top score of 85.4 out of 100. The Dallas' plan exhibited strong integration of adaptation goals, implementation strategies, and coordination mechanisms. Jacksonville came in second at 81.3 and showed strong engagement on adaptation measures. The plans with the moderate alignment with best practices were Chicago, and San Diego, with the scores of 74.6 and 74 respectively, and Phoenix and Columbus with the scores of 69.8 and 65.2. On the lower end of the spectrum, Portland, Albuquerque, and Philadelphia all scored less than 50%, meaning that adaptation only had a minimal adaptation role in their plans. The Philadelphia's plan scored the lowest with the score of 21.9%. The differences in the contents addressing the adaptation in the plans are evident. Although some cities are developing robust adaptation planning, many plans, even the most recent ones, still fall short of comprehensive approaches that were called for in the literature.

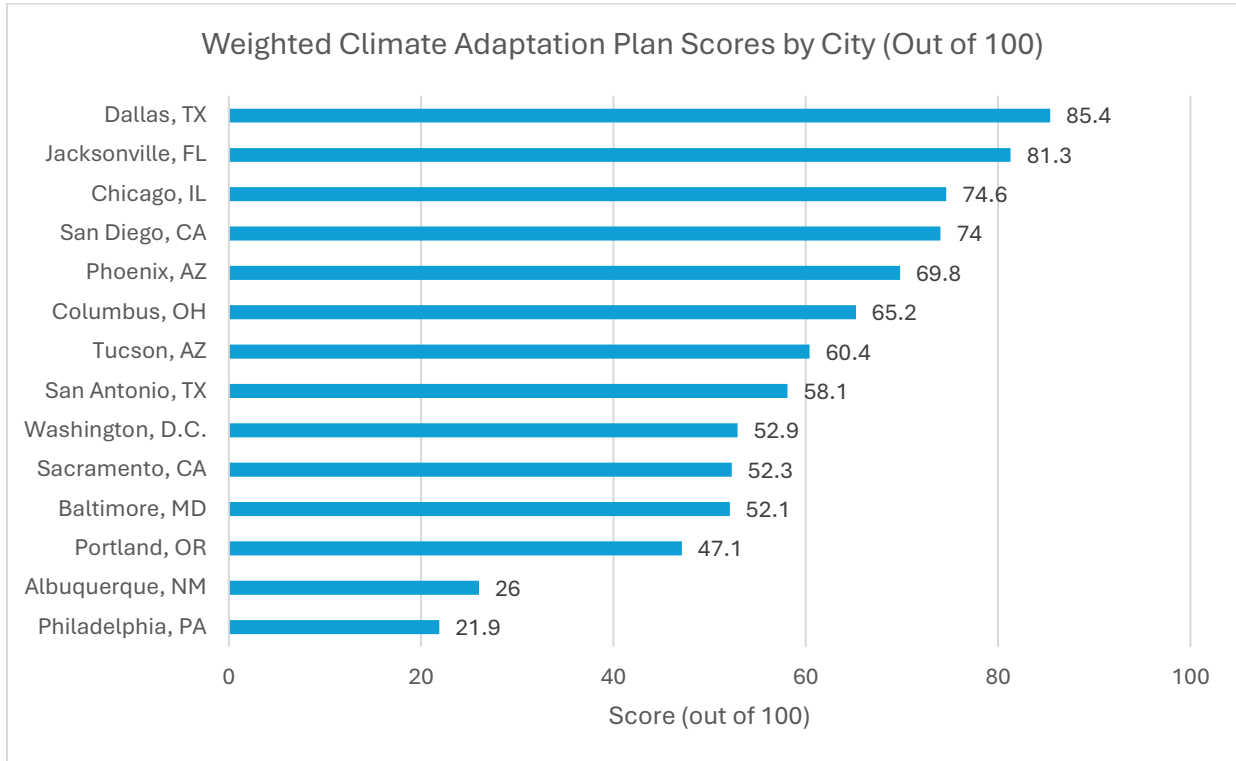


Figure 1. Climate Adaptation Plan Scores (Weighted Scale)

Table 3. Ranking of Climate Action Plans by Weighted Scores

Rank	City	Weighted Score (out of 100)	Raw Score (out of 26)	Year
1	Dallas	85.4	23	2020
2	Jacksonville	81.3	21	2023
3	Chicago	74.6	19	2022
4	San Diego	74	19	2024
5	Phoenix	69.8	19	2021
6	Columbus	65.2	17	2021
7	Tucson	60.4	17	2023

8	San Antonio	58.1	15	2019
9	Washington, D.C.	52.9	13	2020
10	Sacramento	52.3	15	2024
11	Baltimore	52.1	6	2012
12	Portland	47.1	13	2022
13	Albuquerque	26	6	2021
14	Philadelphia	21.9	4	2021

Looking at the average scores by category across all city plans, the strongest area overall was Strategies to Achieve Goals (*Table 4*). This suggests that most cities are relatively strong at outlining actionable steps to accomplish their adaptation goals. Clear and Measurable Goals, Fact Base, and Implementation and Monitoring also scored well, with most cities meeting approximately 68% to 77% of the criteria.

Areas like Public Participation and Climate Justice and Interorganizational Coordination scored lower, averaging between 54% and 57%. This indicates that around half of the cities still struggle to engage communities and collaborate with stakeholders in the planning process. Finance was one of the lowest-scoring categories. Only about a third of the cities had plans that discussed how adaptation actions would be paid for or where funding might come from. The weakest area overall was Addressing Uncertainty. Most plans did not include strategies for how to adapt if future climate conditions change or how to revise the plan and adaptation strategies accordingly.

Table 4. Average Score by Criteria Category

	Criteria Category	Average Score (%)
1	Clear and Measurable Goals	67.86
2	Fact Base	68.57
3	Strategies to Achieve Goals	89.29
4	Public Participation and Climate Justice	54.76
5	Interorganizational Coordination	57.14
6	Implementation and Monitoring	76.79
7	Addressing Uncertainty	19.05
8	Finance	35.71

The table below provides a closer look at how each of the 14 cities ranked across the eight core categories used to assess their climate adaptation plans. Darker shades represent higher scores in each category, while the lighter shades reflect lower performance.

Some cities like Dallas, San Diego, and Phoenix are notable for relatively high scores in most categories. These plans are more fully formed, with well-defined targets, good scientific fact base, and a greater sense of deliberate next steps. Those cities also scored well on aspects like implementation and coordination.

At the other end, Albuquerque, Baltimore, and Philadelphia rounded out the list with low scores across the board, particularly in addressing uncertainty and financing. In fact, addressing uncertainty and finance were the two lowest scoring categories overall. Most cities

did not include explicit strategies for how they would adapt to changing climate projections or how they would pay for that adaptation plans.

In general, the table shows how uneven local climate planning remains. Some cities are going first with holistic and forward-looking plans, while others are coming up short with important pieces. This underscores the need for more consistent guidance and support, so every city, regardless of size and resources, can plan effectively and proactively for climate-resilient futures.

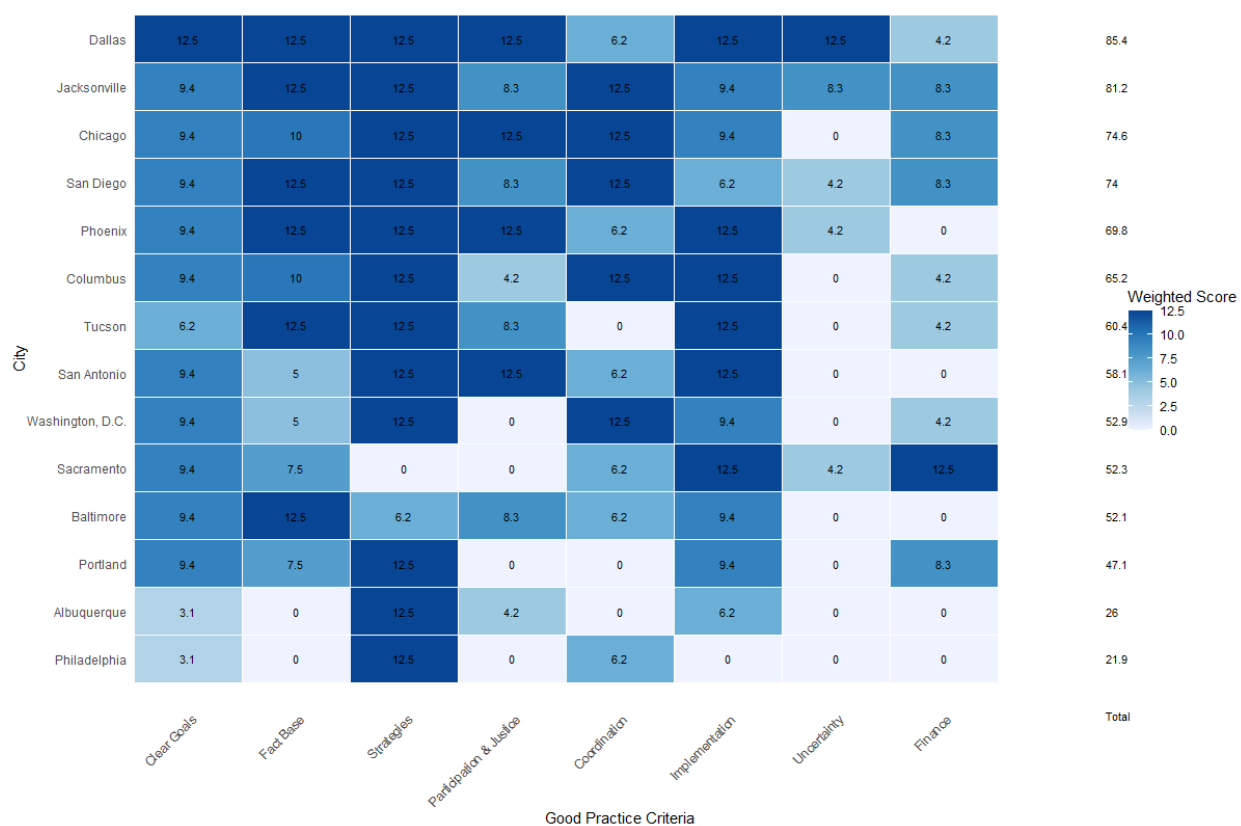


Figure 2. Heatmap of Weighted Scores for City Climate Adaptation Planning Practices Across Key Evaluation Categories

Policy Recommendation

Using a set of best-practice categories identified in the literature, this study analyzed 14 city-level climate adaptation plans. The assessment found important advances in how some cities

are addressing climate uncertainty, but also persisting gaps and differences across areas like finance, addressing uncertainty, equity and coordination. On this basis, the next main policy recommendations aim towards enabling a more coherent, inclusive, and effective national approach to local climate adaptation.

1. Establish a national framework for localized climate adaptation planning.

One of the most striking findings of this study is the degree of variability between the different ways the cities approached adaptation planning. Some plans were robust and reflected best practices, but others were missing fundamental elements, like specific goals linked to identified climate hazards, timelines or responsible parties. This difference stems from the lack of a national framework.

There should be a national framework that:

- Clearly delineates core components of local adaptation goals (goals based on climate vulnerability assessment, implementation, monitoring, and evaluation);
- Specifies sample evaluation tools or metrics to quantify the implementation of the plan;
- Is flexible to be modified for local context but encourage consistent implementation;
- and is nested within an overarching national adaptation strategy that provides directions for federal technical assistance and fundings.

Having such a framework would provide cities with a clear guide while avoiding unnecessary duplication of efforts, and with fewer resources in not being left behind. In the U.S., federal agencies such as the Federal Emergency Management Agency (FEMA) or the U.S. Global Change Research Program (USGCRP) might be responsible for creating and implementing such a system. Eligibility for federal resilience grants, technical assistance

programs for incentives tied to federal infrastructure funding could encourage cities to adopt it. Providing a transparent, adaptable, and resourced framework would enable cities to pursue adaptation planning with greater efficiency, reduce redundancy, and optimize scarce resources to deploy across communities.

2. Ensure that financing is a core pillar of adaptation roadmaps.

Finance was one of the lowest-scoring categories, with many cities not estimating costs of the adaptation projects, identifying potential funding sources, or citing gaps in local budgets.

To address this:

- Local government should be required to provide rough cost estimates for key actions;
- Plans must also pinpoint potential sources of funding (e.g., federal grants, bonds, public-private partnerships);
- State and federal agencies should establish dedicated climate adaptation funding mechanisms – separate from emergency response or disaster relief funds – and provide capacity-building support to enable cities to access them;
- Requiring financing as a necessary component for all climate plans will place cities in a stronger position to transition from planning to implementation.

3. Improve planning for uncertainty of future climate and long-term change.

Addressing uncertainty was the category with the lowest scores in all cities. Few plans took into account how future climate projections could change or how their strategies would adapt over time. This rigidity leaves cities open to being blindsided by rapidly changing climate or to be burdened with outdated plans.

Federal and state guidance should mandate that cities:

- Integrate scenario planning into their risk assessments;
- Set revision cycles into their development out of data or new climate models (3-5 years);
- Plan for many potential futures, not just one predetermined end point;
- Maximize using nature-based solutions (e.g., wetlands, green buffers, permeable surfaces) that are easier and more flexible for future reinforcement, modification, or reconstruction, rather than using grey infrastructure such as sea walls and levees.

4. Integrate equity and climate justice into all phases of adaptation planning.

Public Participation and Climate Justice was another weakness in many plans. While some cities tried to engage communities and recognize disproportionate burden to adapt to climate change, others dropped that entirely. Considering that unequal impacts of climate change to certain communities, this is a significant gap.

Federal and state framework also should:

- Strongly encourage cities to complete equity impact assessments as part of their planning process;
- Require community engagement, especially with historically underserved communities;
- Prioritize needs of populations that are most vulnerable to climate impacts and incorporate those needs into adaptation actions.

5. Promote regional and inter-agency coordination.

Many city plans fell short on interorganizational coordination, with little discussion on how agencies, departments or neighboring jurisdictions would cooperate. To address this issues, the national framework should:

- Support regional adaptation collaboratives that unite several municipalities to prepare for shared risks (e.g., watersheds, wildfire corridors, coastal flooding);
- Define coordination mechanisms including partnerships with county governments, school systems, and non-profit organizations.

Conclusion

With climate impacts increasingly becoming threatening every year, despite continuous mitigation efforts, the need for effective and proactive local-level adaptation planning has never been more urgent. This study aimed to answer a key question: How do current city-level climate adaptation plans compare with core principles established in academic and policy literature and what strategies are most appropriate for a nationwide climate adaptation framework?

Analyzing climate action plans of 14 cities with a view to a ser of best practices adapted from the National Adaptation Plan Good Practice (NAP-GP) criteria by the Global Green Growth Institute (GGGI), and modified to reflect the key principles from the literature review, this study paints a mixed picture. A notable number of cities have worked to draft substantive strategies with solid fact- and science- based goals and strategies and set measurable targets to deliver their adaptation goals. Areas such as Clear and Measurable Goals, Fact Base, and Implementation and Monitoring tended to score well, reflecting a capacity to plan for and take action on climate risks.

However, the analysis also points to several large gaps. The biggest weaknesses were in the Addressing Uncertainty and Finance categories, where many cities neglected to include flexible, revisable plans or failed to identify if and how they would fund adaptation actions. Public Participation and Climate Justice, and Interorganizational Coordination, similarly scored relatively low, which indicates persistent problems with engaging communities on climate action and cooperating across agencies or jurisdictions. These findings highlight a central theme. Although cities are attempting to take the lead when it comes to adaptation, they are doing so in a fragmented and haphazard way, often lacking the infrastructure, support or funding streams necessary for long-term success.

To move from patchwork to collective resilience, this paper suggests five policy recommendations:

1. Establish a national framework for localized climate adaptation planning;
2. Ensure that financing is a core pillar of adaptation roadmaps;
3. Improve planning for uncertainty of future climate and long-term change;
4. Integrate equity and climate justice into all phases of adaptation planning;
5. Promote regional and inter-agency coordination.

Cities are at the forefront of climate adaptation, and many are to meet the challenge. However, lacking national leadership and sustained support, the impact of these local efforts will be limited. A shared goal and framework that is rooted in evidence, equity, and flexibility can help cities plan not only for the climate threats of today, but for the uncertain and constantly changing challenges of tomorrow. Together, we can create the climate-resilient future our communities need, but only with coordinated action at all levels of government.

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Appendix

Evaluation Result of Albuquerque, NM

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?		1
	2	Are adaptation goals presented in a quantifiable and measurable manner?		1
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?		1
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?		1
	6	Was the vulnerability/risk analysis conducted as part of the planning process?		1
	7	Does the plan address future climate hazards?		1
	8	Does the plan integrate local climate projection?		1
	9	Does the plan incorporate spatial analysis to map vulnerable regions?		1
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?		1
	13	In the planning process, was community engagement conducted?	1	
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?		1
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?		1
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?		1
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?		1
	19	Does the plan establish timelines for planned actions?	1	
	22	Does the plan include monitoring and evaluation objectives?		1

Addressing Uncertainty	24	Does the plan address uncertainties in future projections?		1
	25	Is the plan designed to be easily revised?		1
	26	Are the strategies flexible for changes in future scenarios?		1
Finance	20	Does the plan identify the potential costs of implementing the identified adaptation actions?		1
	21	Does the plan identify financing gaps in implementation?		1
	23	Does the plan identify potential funding sources to implement the plan?		1

Evaluation Result of Baltimore, MD

Good Practice Criteria	No.	Matrix Questions	Yes	No
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Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?	1	
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?		1
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?	1	
	9	Does the plan incorporate spatial analysis to map vulnerable regions?	1	
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)		1
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?	1	
	13	In the planning process, was community engagement conducted?		1
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?	1	
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?	1	
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?		1
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?		1
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?		1
	22	Is the plan designed to be easily revised?		1
	23	Are the strategies flexible for changes in future scenarios?		1
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?		1

	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?		1

Evaluation Result of Chicago, IL

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?	1	
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?		1
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?		1
	8	Does the plan integrate local climate projection?	1	
	9	Does the plan incorporate spatial analysis to map vulnerable regions?	1	
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?	1	
	13	In the planning process, was community engagement conducted?	1	
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?	1	
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?	1	
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?	1	
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?	1	

	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?		1
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?		1
	22	Is the plan designed to be easily revised?		1
	23	Are the strategies flexible for changes in future scenarios?		1
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?		
	25	Does the plan identify financing gaps in implementation?	1	
	26	Does the plan identify potential funding sources to implement the plan?	1	

Evaluation Result of Columbus, OH

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?	1	
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?		1
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?		
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?	1	
	9	Does the plan incorporate spatial analysis to map vulnerable regions?	1	
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?		1
	13	In the planning process, was community engagement conducted?	1	

	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?		1
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?	1	
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?	1	
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?	1	
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?		1
	22	Is the plan designed to be easily revised?		1
	23	Are the strategies flexible for changes in future scenarios?		1
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?	1	
	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?		1

Evaluation Result of Dallas, TX

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?	1	
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?	1	
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?	1	

	9	Does the plan incorporate spatial analysis to map vulnerable regions?	1	
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?	1	
	13	In the planning process, was community engagement conducted?	1	
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?	1	
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?		
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?	1	
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?	1	
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?	1	
	22	Is the plan designed to be easily revised?	1	
	23	Are the strategies flexible for changes in future scenarios?	1	
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?		1
	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?	1	

Evaluation Result of Jacksonville, FL

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?		1

	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?	1	
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?	1	
	9	Does the plan incorporate spatial analysis to map vulnerable regions?	1	
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?		1
	13	In the planning process, was community engagement conducted?	1	
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?	1	
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?	1	
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?	1	
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?		1
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?		1
	22	Is the plan designed to be easily revised?	1	
	23	Are the strategies flexible for changes in future scenarios?	1	
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?	1	
	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?	1	

Evaluation Result of Philadelphia, PA

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?		1
	3	Do adaptation goals include time-bound actions?		1
	4	Are the adaptation goals connected to specific impacts/risks of climate change?		1
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?		1
	6	Was the vulnerability/risk analysis conducted as part of the planning process?		1
	7	Does the plan address future climate hazards?		1
	8	Does the plan integrate local climate projection?		1
	9	Does the plan incorporate spatial analysis to map vulnerable regions?		1
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?		1
	13	In the planning process, was community engagement conducted?		1
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?		1
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?	1	
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?		1
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?		1
	18	Does the plan identify responsible parties and their roles?		1
	19	Does the plan establish timelines for planned actions?		1
	20	Does the plan include monitoring and evaluation objectives?		1
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?		1
	22	Is the plan designed to be easily revised?		1
	23	Are the strategies flexible for changes in future scenarios?		1

Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?		1
	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?		1

Evaluation Result of Phoenix, AZ

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?	1	
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?		1
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?	1	
	9	Does the plan incorporate spatial analysis to map vulnerable regions?	1	
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?	1	
	13	In the planning process, was community engagement conducted?	1	
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?	1	
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?	1	
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?		1
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	

	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?	1	
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?		1
	22	Is the plan designed to be easily revised?	1	
	23	Are the strategies flexible for changes in future scenarios?		1
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?		1
	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?		1

Evaluation Result of Portland, OR

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?		1
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?	1	
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?		1
	9	Does the plan incorporate spatial analysis to map vulnerable regions?		1
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?		1
	13	In the planning process, was community engagement conducted?		1

	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?		1
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?		1
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?		1
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?		1
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?		1
	22	Is the plan designed to be easily revised?		1
	23	Are the strategies flexible for changes in future scenarios?		1
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?	1	
	25	Does the plan identify financing gaps in implementation?	1	
	26	Does the plan identify potential funding sources to implement the plan?		1

Evaluation Result of Sacramento, CA

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?		1
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?	1	
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?		1

	9	Does the plan incorporate spatial analysis to map vulnerable regions?		1
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?		1
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)		1
	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?		1
Public Participation and Climate Justice	13	In the planning process, was community engagement conducted?		1
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?		1
	15	Does the plan include strategies to enhance coordination across government agencies?	1	
Interorganizational Coordination	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?		1
	17	Does the plan outline adaptation actions for implementation?	1	
Implementation and Monitoring	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?	1	
	21	Does the plan address uncertainties in future projections?		1
Addressing Uncertainty	22	Is the plan designed to be easily revised?		1
	23	Are the strategies flexible for changes in future scenarios?	1	
	24	Does the plan identify the potential costs of implementing the identified adaptation actions?	1	
Finance	25	Does the plan identify financing gaps in implementation?	1	
	26	Does the plan identify potential funding sources to implement the plan?	1	

Evaluation Result of San Antonio, TX

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?		1

	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?	1	
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?		1
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?		1
	9	Does the plan incorporate spatial analysis to map vulnerable regions?		1
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?	1	
	13	In the planning process, was community engagement conducted?	1	
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?	1	
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?		1
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?	1	
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?	1	
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?		1
	22	Is the plan designed to be easily revised?		1
	23	Are the strategies flexible for changes in future scenarios?		1
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?		1
	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?		1

Evaluation Result of San Diego, CA

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?		1
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?	1	
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?	1	
	9	Does the plan incorporate spatial analysis to map vulnerable regions?	1	
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?	1	
	13	In the planning process, was community engagement conducted?		1
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?	1	
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?	1	
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?	1	
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?		1
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?		1
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?	1	

	22	Is the plan designed to be easily revised?		1
	23	Are the strategies flexible for changes in future scenarios?		1
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?	1	
	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?	1	

Evaluation Result of Tucson, AZ

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?		1
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?		1
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?	1	
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?	1	
	8	Does the plan integrate local climate projection?	1	
	9	Does the plan incorporate spatial analysis to map vulnerable regions?	1	
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	
Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?	1	
	13	In the planning process, was community engagement conducted?	1	
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?	1	
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?		1

	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?		1
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?	1	
	20	Does the plan include monitoring and evaluation objectives?	1	
Addressing Uncertainty	21	Does the plan address uncertainties in future projections?		1
	22	Is the plan designed to be easily revised?		1
	23	Are the strategies flexible for changes in future scenarios?		1
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?	1	
	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?		1

Evaluation Result of Washington, D.C.

Good Practice Criteria	No.	Matrix Questions	Yes	No
Clear and Measurable Goals	1	Do goals, visions, or objectives in the plan outline desired future outcomes?	1	
	2	Are adaptation goals presented in a quantifiable and measurable manner?	1	
	3	Do adaptation goals include time-bound actions?	1	
	4	Are the adaptation goals connected to specific impacts/risks of climate change?		1
Fact Base	5	Does the plan study current conditions based on relevant scientific facts and evidence?		1
	6	Was the vulnerability/risk analysis conducted as part of the planning process?	1	
	7	Does the plan address future climate hazards?		1
	8	Does the plan integrate local climate projection?	1	
	9	Does the plan incorporate spatial analysis to map vulnerable regions?		1
Strategies to Achieve Goals	10	Does the plan identify vulnerable sectors?	1	
	11	Does the plan present actionable solutions by sector identified to be vulnerable? (e.g., land use, green infrastructure, energy, transport, etc.)	1	

Public Participation and Climate Justice	12	Does the plan identify certain communities and groups that will be particularly affected by future impacts?		1
	13	In the planning process, was community engagement conducted?		1
	14	Does the plan address the disproportionate impacts of climate change on marginalized communities?		1
Interorganizational Coordination	15	Does the plan include strategies to enhance coordination across government agencies?	1	
	16	Does the plan involve coordination strategy among local governments, private sector partners, non-profits and research/education institutions?	1	
Implementation and Monitoring	17	Does the plan outline adaptation actions for implementation?	1	
	18	Does the plan identify responsible parties and their roles?	1	
	19	Does the plan establish timelines for planned actions?		1
	22	Does the plan include monitoring and evaluation objectives?	1	
Addressing Uncertainty	24	Does the plan address uncertainties in future projections?		1
	25	Is the plan designed to be easily revised?		1
	26	Are the strategies flexible for changes in future scenarios?		1
Finance	24	Does the plan identify the potential costs of implementing the identified adaptation actions?		1
	25	Does the plan identify financing gaps in implementation?		1
	26	Does the plan identify potential funding sources to implement the plan?	1	