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An Assessment of Heat Action Plans: Global standards, good practices and partnerships

GLOBAL HEAT HEALTH INFORMATION NETWORK
WORLD METEOROLOGICAL ORGANIZATION
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Executive Summary

As global temperatures continue to rise, the frequency and intensity of extreme heat events have escalated, posing significant risks to public health, infrastructure, and economies worldwide. While Heat Action Plans (HAPs) help to mitigate these impacts across national, regional, and local levels of governance, the lack of formal standards has led to variations in structure, purpose, and implementation among nations, regions, and municipalities. This variability often results in fragmented approaches, leading to critical gaps in funding, vulnerability assessments, and long-term resilience strategies.

This synthesis report identifies best practices and persistent challenges to provide a structured framework for improving heat resilience based on evaluations of heat action plans from six countries—Australia, Canada, France, India, the United Kingdom, and the United States. Although twelve countries were initially considered, no publicly accessible national or subnational heat action plans were identified for Argentina, Bangladesh, Ecuador, Egypt, Republic of Korea, and Senegal.

It advocates for an adaptable governance framework, proposing that national guidance related to HAPs incorporate adaptable core elements, such as standardized heat risk definitions, clear agency roles, multi-sector coordination, and early warning systems. This foundational structure would enable cohesive planning across governance levels, equipping regions to develop context-specific HAPs that align with national resilience objectives.

The report also highlights persistent issues identified in recent evaluations, including the scarcity of dedicated funding mechanisms, inconsistent long-term planning, and limited evaluation capacities, which weaken the overall efficacy of many HAPs. By spotlighting best practices from the evaluated plans, this report provides adaptable recommendations that can help countries establish a national framework supporting sub-national plan development, thereby enabling unified, scalable responses that address both immediate and future heat risks effectively.

Observations

Most HAPs Lack Comprehensive Vulnerability Assessments and Long-Term Resilience Strategies: While many plans excel in short-term preparedness and response mechanisms, elements related to vulnerability assessments, long-term adaptation strategies, and synthesis with other plans (across local and national scales) are often underdeveloped or absent. Moreover, most HAPs do not address funding needs, an essential component for sustaining resilience initiatives over time. This deficiency underscores the need for comprehensive approaches that anticipate future heat risks and embed long-term resilience, as well as target resources effectively.

Early Warning Systems Are Emphasized, Missing Proactivity In Evaluation: Most HAPs include existing early warning system (EWS) infrastructure, informing an operational definition of extreme heat coupled with historical context. Plans are often preempted by an extreme heat disaster, rather than being proactively developed. Furthermore, few EWS integrate health-outcome data, a critical component for refining response protocols based on real-time impacts. Incorporating continuous data-driven evaluations would strengthen these systems' effectiveness in reducing heat-related health risks.

Single-Sector Governance Limits Comprehensive Heat Response: The absence of a standardized HAP structure results in significant variability in design and implementation, complicating cross-regional knowledge-sharing and reducing the transferability of best practices. Single-sector HAPs, focused primarily on health, often overlook broader impacts, such as those on infrastructure, urban planning, and social services. Establishing a national-level adaptable governance framework could support consistent standards across regions while allowing flexibility for locally relevant adaptations, thereby enhancing inter-agency and inter-regional collaboration.

Overarching Good Practices

Each of the HAPs reviewed illustrates a necessary step by national and subnational partners to take action in preparing for and responding to worsening heat impacts. Observations across plans indicate strong progress in recognizing the importance of heat preparation, warning systems, and response, but long-term resilience has not been shaped as adequately. Balancing short and long timescales of action will be key moving forward as countries seek to build upon their heat action commitments. The six overarching best practices of national guidance, explicit roles, clear funding mechanism, reuse of infrastructure, multi-sectoral planning, and metrics-based evaluation are applicable beyond each of the core elements of a HAP. Particularly, as heat response is adopted by agencies included in the HAPs, widespread and integrated campaigns across sectors will be critical to addressing the complex impacts of extreme heat.

1. Adopt a standardized, adaptable national framework for HAPs. A strong HAP framework should include a clear structure that can be adapted by local, regional, and national governments, ensuring consistency while allowing for local relevance. National guidance offers a foundational backbone, with key features like clearly defined governance architecture and responsibilities. This adaptable governance framework supports local flexibility and allows sub-national plans to align with broader goals, such as heat resilience and emergency preparedness while remaining contextually relevant.

2. Clearly define roles and responsibilities across levels of government and sectors. Clearly defining the roles, responsibilities, and intended audience is crucial for a functional heat action plan. Goals and objectives should be stated upfront, ensuring that all stakeholders —across government levels—understand their duties in both planning and execution. A complete action plan must include defined responsibilities, communication channels, timeframes, and mechanisms for coordination.

3. Embed sustainable funding mechanisms in HAPs. Addressing heat resilience requires consistent funding for ongoing adaptations. HAPs should integrate strategies for fiscal sustainability, identifying potential funding sources and conducting feasibility assessments to prioritize high-impact interventions. A HAP (e.g., Tucson's), which incorporates regular updates and fiscal planning within its adaptive timeline, demonstrates a proactive approach to funding, allowing flexibility for evolving climate conditions. Building these elements into HAPs ensures that plans are both actionable and enduring.

4. Leverage existing plans and infrastructure for cost-effective implementation. A heat action plan can be bolstered by the utilization of existing frameworks across risks such as climate adaptation and disaster management plans. Drawing on established vulnerability assessments and existing governance infrastructure ensures that HAPs are both timely and cost-effective.

5. Ensure multi-sector coordination for unified heat risk management. A multi-sectoral approach is critical for addressing heat impacts comprehensively. HAPs should connect efforts across health, urban planning, transportation, and other sectors, ensuring that heat risk management is unified and inclusive of society-wide needs. It is essential to ensure that single-sector strategies are linked to broader, multi-sectoral efforts to create a unified response to heat risks across society.

6. Incorporate metrics-based evaluation for continuous improvement. An effective HAP incorporates metrics-based evaluation, with regular performance reviews that measure the plan's success across its core elements. These evaluations should assess adaptive capacity, response timelines, resource allocation, and community engagement. By integrating evaluation metrics, plans can adapt based on data-driven insights, enhancing their long-term effectiveness. Routine monitoring and updates allow for HAPs to evolve, ensuring that they remain responsive to changing climate impacts.

Introduction

Heat Action Plans (HAPs) are essential for protecting people, infrastructure, and ecosystems from the increasing impacts of extreme heat. These plans help communities organize immediate responses, build long-term resilience, and streamline the necessary actions across various sectors and governance levels. However, with significant variability in HAP design and implementation worldwide, the effectiveness of these plans often depends on the structure and inclusion of specific foundational elements. This synthesis assesses HAPs across nine core criteria, each essential to an effective and sustainable approach to heat resilience (See Figure 1).

A comprehensive plan is founded upon a clear definition of extreme heat and an understanding of the breadth of impact across the relevant geographic area, with particular awareness of both local climate and social conditions. This allows for targeted interventions for at-risk groups like aged populations or outdoor workers. When definitions are vague or absent, gaps in preparedness and action arise.

Central to any HAP is preparedness and early warning systems (EWS). Effective plans integrate early warnings with public communication, ensuring timely alerts and readiness both in the short and long term. Where EWS are less integrated, gaps in public outreach reduce the impact of preparedness strategies. Coupled with this, clear response mechanisms ensure that cooling centres, medical aid, and other critical services are mobilized efficiently. In well-developed plans, these actions flow directly from preparedness efforts, while less-developed plans leave response efforts unclear.

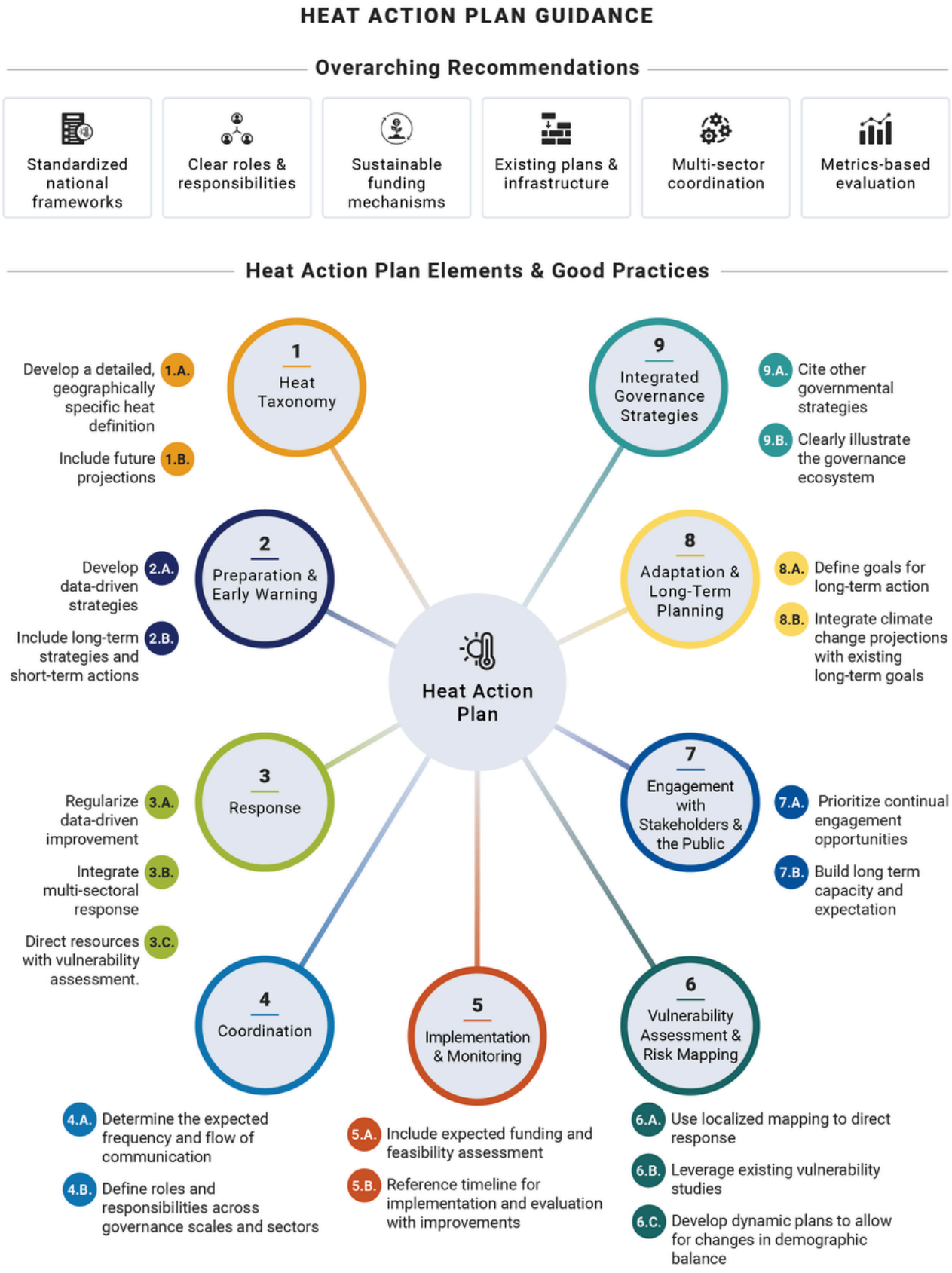
Coordination is another key element, ensuring that agencies across sectors like health and transportation work together seamlessly during heat events. The most successful plans have clear communication channels and defined roles for stakeholders. Without this, fragmentation and inefficiency can occur. Plans must also have strong implementation and monitoring frameworks to ensure actions are taken and progress is tracked. The best plans include timelines and regular review mechanisms, while those lacking this structure risk becoming outdated.

To guide resource allocation, detailed vulnerability assessments and risk mapping are critical. Identifying the populations and areas most at risk allows interventions to be targeted effectively. Where assessments were more general, prioritization of resources became difficult, potentially leaving high-risk communities underserved.

Equally important is public and stakeholder engagement. Plans that incorporate ongoing engagement from development through implementation are better equipped to adapt and reflect local needs. In contrast, plans with limited engagement struggle to maintain relevance over time.

Lastly, adaptation and long-term planning, integrated into broader climate and urban strategies, help reduce future heat risks. The most forward-looking plans not only address immediate heatwave responses but also build climate resilience through infrastructure and environmental improvements. Effective integration with other plans, such as disaster risk reduction and climate action, ensure these efforts are part of a cohesive, multi-sectoral approach. Plans that operate in isolation miss opportunities for synergy and holistic action.

FIGURE 1: OVERVIEW OF HEAT ACTION PLAN ASSESSMENT



Methods

Plans for each country were selected from the repository of HAPs compiled by the Global Heat Health Information Network (GHHIN), as well as targeted web-based searches. As part of the Decision Support Package, twelve countries were considered for evaluation: Argentina, Australia, Bangladesh, Canada, Ecuador, Egypt, France, India, Senegal, Republic of Korea, the United Kingdom, and the United States. Only dedicated heat response documents were considered; national adaptation or climate response plans were not considered. Consequently, the lack of a dedicated heat response document restricted evaluation of the following countries: Argentina, Bangladesh, Ecuador, Egypt, Sengal, and Republic of Korea. For countries with multi-tiered governance, a selection of plans was considered for each tier, the national or highest-jurisdiction level down to the province or city level. Given the diversity in plan structure, each document was considered within the context of the country's heat governance, allowing for fair comparison between single-sector and multi-sector plans, city-wide and nation-wide plans, etc.(1)

TABLE 1: SCORING SCHEMA FOR HAP ASSESSMENT

Metric	Scoring
1. Heat Wave Definition and Impact (0—2 points)	0 = No definition of heat waves/extreme heat exposure specific to regional context.
	1 = Basic definition included, with some identification of vulnerable populations/areas.
	2 = Comprehensive definition with clear identification of specific vulnerable populations and areas (e.g. urban heat islands, low-income neighbourhoods).
2. Preparedness and Early Warning Systems (0—2 points)	0 = No clear strategies for heat preparedness or early warning systems.
	1 = Some strategies included, with a basic early warning system mentioned.
	2 = Actionable strategies for short- and long-term preparedness, including early warning.
3. Response Mechanisms (0—2 points)	0 = No clear strategies for heat response during- and post-event.
	1 = Some strategies, involving integration with early warning/communication systems.
	2 = Detailed and actionable strategies for both short-term and long-term response, including continuity from preparedness plans - based on health outcome data.
4. Coordination (0—2 points)	0 = No mention of inter-agency coordination or public communication.
	0.5 = Basic outline, ambiguous or minimal ministries named.
	1 = Basic outline of coordination and communication strategies comprising 2—4 relevant ministries with intended frequency and flow of coordination.
	1.5 = Descriptive coordination and communication strategies comprising 5—7 relevant ministries with intended frequency and flow of coordination.
	2 = Clear and effective coordination among agencies (7+), with well-defined public communication strategies and roles for all stakeholders.
5. Implementation and Monitoring (0—2 points)	0 = No system for implementation or monitoring.
	1 = Basic implementation plan with minimal monitoring.
	2 = Comprehensive implementation plan with clear timelines, responsibilities, and robust monitoring system for evaluation and revision, with clear communication.
6. Vulnerability Assessment and Risk Mapping (0—2 points)	0 = No vulnerability assessment or risk mapping.
	1 = Basic vulnerability assessment with some risk mapping.
	2 = Comprehensive vulnerability assessment with detailed risk maps guiding resource allocation and interventions.
7. Public and Stakeholder Engagement (0—2 points)	0 = No engagement with stakeholders or the public.
	1 = Limited engagement with some stakeholder input.
	2 = Active/ongoing engagement with stakeholders and the public, with mechanisms for feedback and plan adjustments.
8. Adaptation and Long-Term Planning (0—2 points)	0 = No mention of long-term adaptation measures.
	1 = Basic mention adaptation, but lacking detail/integration with other planning efforts.
	2 = Well-defined long-term adaptation strategies, including urban infrastructure improvements and alignment with climate change projections.
9. Integration Governance Strategies (0—1.5 points)	0 = No integration with other local or state plans.
	0.5 = Minimal integration with other plans.
	1.0 = Some integration with other local or state plans, with basic communication channels established between agencies.
	1.5 = Comprehensive integration with multiple plans, ensuring a cohesive approach to managing extreme heat across sectors.

1. For documents in a language other than English, the DeepL AI free translation tool was used. See Appendix A for the list of all plans evaluated and Table 1 below for the evaluation schema.

Analysis

This analysis offers insights into both common strengths and recurring gaps, highlighting exemplary practices that serve as models across diverse governance contexts. By focusing on the unique contributions and limitations within each criterion—such as heat wave definitions, early warning systems, and stakeholder engagement—the synthesis identifies actionable strategies and best practices that enhance resilience and readiness in the face of rising heat challenges.

1. Heat Taxonomy

Standard: Comprehensive definition with clear identification of specific vulnerable populations and areas (e.g. urban heat islands, low-income neighbourhoods).

Across most of the HAPs regardless of governance level, heat waves or extreme heat events are defined by definitions from national bureaus of meteorology and heat thresholds in EWS. Examples of previous heat waves are frequently used to highlight the motivation for plans as well as to describe the tangible impacts of heat. Additionally, many plans list heat-health outcomes, some detail other sectoral impacts, and most plans reference specific vulnerable groups. However, geographically specific vulnerable areas, like potential urban heat islands or low-income neighbourhoods, are largely missing. The City of Tucson in Arizona includes a comprehensive background section on heat, describing the historical context of heat in the city as well as specific climatological statistics regarding high temperatures and increased hot days. This is the only plan that clearly identifies specific high risk areas within their jurisdiction, coupled with a brief but detailed multi-sectoral description of heat impacts extending far beyond health.

Good Practices

1.A. Develop a detailed, geographically specific heat definition. Climatological context for the area covered by the plan should be included for both awareness and to be referenced for targeted actions.

1.B. Include future projections. Consideration of how heat may change across timescales allows for effective long-term planning.

2. Preparation and Early Warning

Standard: Detailed and actionable strategies for both short-term and long-term preparedness, including a robust early warning system integrated with communication channels and community outreach based on health outcome data.

All plans assessed feature EWS or heat alert and response systems (HARS), and most utilize heat thresholds to define specific communication strategies. However, the clear incorporation of health outcome data is often missing, a critical component for designing the most effective EWS. Several plans include sample messages for specific audiences, with some plans listing explicit agencies and tasks. One unique example of community engagement and communication is France's national HAP, which incorporates a proactive approach that encourages public preparedness and education well before the heat season begins. The plan is distinctly organized into targeted streams for various audience groups, such as youth, vulnerable groups, and workers, as well as the general population. By mobilizing youth for community outreach and organizing educational events, France's HAP promotes both awareness and actionable steps, encouraging citizens to prepare their homes and lifestyles for extreme heat.

Good Practices

2.A. Develop data-driven strategies. Obtaining health outcome data and incorporating them to refine EWS and preparedness actions provides opportunities for objective improvement.

2.B. Include long-term strategies and short-term actions. While preparation for the next heat season will always take precedence, it is also important to prioritize actionable steps to achieve long-term preparatory goals.

3. Response

Standard: Detailed and actionable strategies for both short-term and long-term response, including continuity from preparedness plans based on health outcome data.

Often HAPs align their response mechanisms with their EWS, listing tasks or strategies for each warning level. While health outcome data are frequently missing from this section, several plans clearly define roles and responsibilities for various agencies. Many plans focus on immediate communication and health system response, fewer detail distinct strategies for multiple sectors or long-term improvement. The Australian state of Victoria's State Emergency Management Plan (SEMP) Heat Sub-plan is a comprehensive example that excels in multi-sectoral coordination and detailed response assignments. This plan includes the Department of Health, Department of Environment, Land, Water and Planning, and Department of Transportation, each with specific roles, such as managing health services, environmental response, and transport adaptations, making it clear which agency is responsible for each task. The plan's specificity in assigning tasks across agencies makes it a model for heat response and cross-sector coordination, although clarification on timing and execution procedure would further strengthen the plan's efficacy. A unique aspect of the plan is its strong emphasis on recovery, encompassing social, economic, environmental, and cultural aspects, including specific considerations for Aboriginal communities.

Good Practices

3.A. Regularizing data-driven improvement. In addition to ensuring that metrics are collected to assess efficacy, response mechanisms should provide routine opportunities for evidence-based refinements.

3.B. Integrate multi-sectoral response. While governance structures may dictate a document be single or multi-sectoral, response strategies should incorporate cohesion elements to mitigate gaps and overlapping response.

3.C. Direct resources with vulnerability assessment. Utilizing risk maps throughout the response plan will allow for meaningful, targeted resource allocation.

4. Coordination

Standard: Clear and effective coordination among agencies (7+), with well-defined public communication strategies and roles for all stakeholders.

Effective coordination in heat action plans involves clearly identifying key agencies, defining their roles, and establishing a framework for interaction. Plans that excel in coordination go beyond cataloging agencies; they outline specific tasks and responsibilities, ensuring that each agency understands its role and how to work alongside others in a cohesive response. However, single-sector plans, such as those limited to health, understandably focus on fewer agencies, detailing coordination within that specific sector rather than across multiple areas.

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India's heat action plans are exemplary in their Response Mechanisms, as they delineate specific actions to be taken by diverse agencies before, during, and after heat events. Many HAPs, such as those in Kishtwar, outline standard operating procedures (SOPs) that specify departmental responsibilities for actions such as setting up cooling centers, distributing water, and managing emergency medical resources. These SOPs enable agencies to respond swiftly and consistently across affected areas, minimizing delays and ensuring resources are distributed effectively. However, while the plan offers detailed response frameworks within individual regions, inter-agency collaboration between states could further enhance consistency during widespread heat events.

Additionally, both the City of Toronto's and Victoria's State Emergency Management Plan (SEMP) Heat Sub-Plan stands out for its robust coordination framework, identifying and assigning roles to diverse agencies, including those in health, environment, energy, water, animal welfare, and education sectors. The plan provides structured coordination guidance and explicit tasks for each agency, creating a clear and organized approach to managing heat impacts. Additionally, Victoria's well-developed communication strategy designates spokespersons at both state and regional levels, enabling consistent messaging to the public and media.

Good Practices

4.A. Determine the expected frequency and flow of communication. Beyond naming agencies and listing tasks, HAPs should explicitly delineate expectations for communication and coordination.

4.B. Define roles and responsibilities across governance scales and sectors. Separate sectors will have numerous actors in each, thus emphasizing the importance of defined roles and feasible cooperation.

5. Implementation and Monitoring

Standard: Comprehensive implementation plan with clear timelines, responsibilities, and a robust monitoring system to track effectiveness and allow for plan revisions, with clear communication channels.

Strong implementation and monitoring mechanisms are vital to translating HAP strategies into action and ensuring that plans are adaptable over time. The most effective plans provide comprehensive implementation frameworks with clear timelines, designated responsibilities, and robust monitoring systems to evaluate impact and drive revisions as needed.

The United Kingdom's adverse weather plan and Tucson's heat action plan offer strong examples in implementation and monitoring. The UK's plan includes specific timelines, defined agency responsibilities, detailed health metrics, and periodic reviews to ensure accountability and responsiveness. Tucson's plan exemplifies best practices by setting clear implementation dates, developing metrics for monitoring progress, and incorporating feedback mechanisms. Tucson also updates its HAP regularly—every two to three years—allowing the plan to evolve with new data and community needs. Both plans underscore the value of structured implementation strategies, clear timelines, and continuous evaluation, ensuring that heat action remains relevant and effective in the face of changing heat risks. Uniquely, the Heat Alert and Response System Guide from the Canadian province of Manitoba incorporated internal evaluation, including a table specifically listing identified gaps and corresponding actions, demonstrating that even if a plan does not address every challenge, acknowledging areas for improvement can facilitate incremental progress. However, a notable gap across plans was the absence of explicit funding mechanisms or cost assessments, which are essential for sustainable, long-term heat action planning. Without dedicated funding strategies, the practical execution of even well-designed plans may face significant barriers, especially in resource-limited areas.

Good Practices

5.A. Include expected funding and feasibility assessment. Budgetary descriptions are vital for ensuring accurate implementation, as is an understanding of the realistic feasibility of a plan.

5.B. Reference timeline for implementation and evaluation with improvements. Practical execution requires a transparent timetable of action and evaluation, as well as naming supervisory bodies.

6. Vulnerability Assessment and Risk Mapping

Standard: Comprehensive vulnerability assessment with detailed risk maps guiding resource allocation and interventions.

Understanding local vulnerability and targeting resources to high risk areas are noticeable gaps across all plans. While the HAPs generally cited vulnerable populations, naming groups like the aged or referencing health risks, few plans detail a comprehensive vulnerability assessment, extensive risk maps, or mention a plan to generate these. Examples of plans that address these issues include the City of Tucson, which utilizes a health equity index to show areas of the city that were at the greatest risk as well as tree equity scores to delineate areas in need of green space and shade. The potency of these efforts could be bolstered by applying these assessments throughout the plan and response activities. In another approach, the UK HSA Adverse Weather and Health Plan presents an Equity Review and Impact Assessment as a connected document, clearly defining its purpose and utility in evaluating equity in response and guiding future efforts despite its separation from the plan.

Good Practices

6.A. Use localized mapping to direct response. Convey an in-depth understanding of the needs of the population, and ensure response efforts are guided by this knowledge.

6.B. Leverage existing vulnerability studies. Utilizing existing work on understanding regional vulnerability saves resources and promotes governance cohesion.

6.C. Develop dynamic plans to allow for changes in demographic balance. Understanding population dynamics and demographic balance at different timescales is key for developing long-term strategies that are feasible and remain so.

7. Engagement with Stakeholders and the Public

Standard: Active and ongoing engagement with stakeholders and the public, with mechanisms for feedback and adjustments to the plan.

Communication to the public is an emphasis across the HAPs, but two-way engagement with stakeholders is limited. Outside of governmental agencies and named response bodies, engagement with stakeholders like community organizations, NGOs, or industry are sometimes vague, and mechanisms to give feedback on the plan are not explicit. Some plans mention engaging with the public or specific groups in the creation and revision of the documents, but lack strategies for ongoing effort to continue stakeholder engagement. Distinctly, the City of Tucson engages with stakeholders for the creation of their plan and directly identifies these contributors, while subsequently naming potential partners for each set of actions listed. Response campaigns mention "regular evaluations", but implementation methodology including engagement with stakeholders or members of the public is not outlined. Following a detailed monitoring strategy, the UKHSA Adverse Weather plan also documents explicit engagement strategies like focus groups and consumer insight targets in order to improve communications, but lacks a timeframe for future engagement.

Good Practices

7.A. Prioritizing continual engagement opportunities. One-time involvement is not enough to be considered "active and ongoing engagement", thus strategies for ensuring ongoing stakeholder participation are required.

7.B. Build long-term capacity and expectation. Ensuring that engagement does not place undue burden on stakeholders or the public is essential for their involvement, as is building in feedback-based refinements to the HAPs.

8. Adaptation and Long-Term Planning

Standard: Well-defined long-term adaptation strategies, including urban infrastructure improvements and alignment with climate change projections.

Aside from immediate heat wave response, long-term planning and adaptation strategies are critical for combatting extreme heat. Most heat action plans emphasize short-term strategies and immediate responses, often at the expense of addressing complex, long-term issues such as heat-related inequities and infrastructure inadequacies—challenges that demand multi-stage, multi-year commitments. In contrast, France's national plan stands out for its relatively more comprehensive approach, focusing on long-term preparation to equip its population for rising temperatures in the coming decades, rather than limiting efforts to the immediate heat season. Through policy measures to protect labourers, promote public education, and investigate resilience in different utilities, these focused strategies advance France's long-term response to heat. Kishtwar also targets specific actions for heat adaptation separate from short-term and medium-term response, including infrastructure updates and building community capacity. Broader national strategies also lend themselves to delineating long-term action, such as the US NIHHIS National Heat Strategy which sets goals for increased research and monitoring, while leaning on sub-national plans for short-term response and implementation.

Good Practices

8.A. Define goals for long-term action. While adaptation can be a less well-defined ambition, utilizing specific goals for long-term action will help with ensuring appropriate steps are taken outside of the immediate preparation and response.

8.B. Integrate climate change projections with existing long-term goals. Coordinating across sectors and governance levels to unify long-term goals for heat adaptation builds partnerships and preserves resources.

9. Integrated Governance Strategies

Standard: Comprehensive integration with multiple plans, ensuring a cohesive approach to managing extreme heat across sectors and robust communication.

While the government structures influence the construction of heat response, it is essential for the HAP to explain its place in the overarching governance ecosystem to ensure complete coverage of responsibilities. Many countries, especially larger ones, used a multi-tier approach, with national guidance in addition to more explicit plans at the state or municipal level. Another common approach is the creation of single-sector larger plans, such as the UK's for its national health system's Adverse Weather Plan and separate heat wave health system plan. Lateral integration with neighbouring regions is not often included, exposing possible confusion and gaps in coverage, as well as opportunities for collaboration and integration. The Victoria Heat Sub-Plan is an example of clear and robust interconnection of distinct but relevant plans within state boundaries, belonging to the State Emergency Management Plan (SEMP) system. However, one potential gap in coverage can be found in the lack of acknowledgment of neighbouring states' strategies. Similarly, there are numerous Indian states with robust, multi-sector HAPs, but there is an opportunity for purposeful interaction between plans.

Good Practices

9.A. Cite other governmental strategies. Direct references to other, relevant government strategies builds cohesion across policies while incorporating opportunities for partnership and resource sharing.

9.B. Clearly illustrate the governance ecosystem. Description of the interaction of the levels of heat governance ensures awareness of the position of the HAP and mitigates potential gaps in coverage.

Conclusion

Key Takeaways for Future Action

Harmonizing Short-Term Response with Long-Term Planning
While immediate interventions like cooling centres and health advisories effectively mitigate acute health risks, incorporating durable infrastructure and climate-resilient urban planning into HAPs will better prepare communities for evolving climate realities. Public-private partnerships play a crucial role here: partnerships with technology firms, infrastructure companies, and data analytics providers can help integrate innovative, climate-smart solutions into long-term planning. This approach enables HAPs to seamlessly bridge short-term emergency measures with sustainable resilience strategies, ensuring continuity across all timescales.

Advancing Sectoral Integration for Comprehensive Heat Management
A multi-sectoral approach, encompassing health, urban infrastructure, emergency response, and social services, is essential for addressing heat impacts holistically. Private sector expertise in areas such as data management, public health solutions, and emergency logistics can supplement public efforts, helping to create an integrated response that mobilizes resources effectively across sectors. National HAP frameworks can provide structured entry points for private entities to engage in resilience-building, enhancing the speed and scope of cross-sector collaboration to ensure that no sector is isolated in the heat response effort.

Aligning National HAPs with International Standards
Global standards, such as WHO's health guidelines, UNDRR's resilience frameworks, and the Sendai Framework for Disaster Risk Reduction, provide valuable benchmarks for HAP design and evaluation. An internationally endorsed framework for HAPs could incorporate these standards, allowing member states to improve consistency, comparability, and accountability across borders. This alignment not only strengthens national resilience but also enhances global knowledge sharing, as countries contribute lessons learned and innovations back to the international community.

Opportunities for Strategic Public-Private Engagement
Public-private partnerships (PPPs) are instrumental in addressing specific needs within HAPs, from deploying cooling solutions to advancing predictive technologies for early warning systems. Structuring HAPs to clearly outline areas where private sector involvement is needed fosters targeted investments and innovation, helping member states leverage expertise from industries such as infrastructure, healthcare, and logistics to address urgent and long-term needs. A national framework that embeds defined roles for private sector partners can catalyze rapid response capacity, particularly when PPPs align with standards like WHO, UNDRR, and the Sendai Framework. This alignment ensures that PPP contributions enhance both local and global resilience goals, facilitating resource mobilization and a coordinated response framework that benefits both public and private sectors during extreme heat events.

Ultimately, HAPs must evolve to be proactive and collaborative, incorporating insights and innovations across multiple sectors. This synthesis provides member states with a clear, structured approach to crafting impactful, aligned, and adaptive HAPs that strengthen resilience today and prepare communities for the heat challenges of tomorrow.

APPENDIX A

TABLE 2. LIST OF HAPS EVALUATED.

Member State	Location (jurisdiction)	Document
Australia	South Australia (state)	South Australia Health Extreme Heat and Heatwave Strategy
	Victoria (state)	State Emergency Management Plan Extreme Heat Sub-Plan
Canada	(national)	Heat Alert and Response Systems to Protect Health: Best Practices Guidebook
	British Columbia (province)	Municipal Heat Response Planning in British Columbia, Canada (Referenced: BC Provincial Heat Alert and Response System (BC HARS): 2024)
	Manitoba (province)	Manitoba Heat Alert and Response System Guide
	Toronto (city)	2024 City of Toronto Heat Relief Strategy
France*	(national)	Plan de Gestion des Vagues de Chaleur / France Heatwave Management Plan, France National Heatwave Plan (Plan National Canicule)
India	(national)	National Action Plan on Heat Related Illnesses
	Kishtwar (state)	Kishtwar Heat Wave Action Plan
	Doda (state)	Heat Wave Action Plan, 2024-2025
United Kingdom	(national)	UKHSA Adverse Weather Health Plan
	England (country)	NHS Heatwave Plan for England
	Isle of Wight (county)	Heat Wave Plan 2024
United States	(national)	NIHHIS National Heat Strategy 2024-2030
	Maryland (state)	Maryland (DHS) Extreme Heat Emergency Plan
	Tucson (city)	Heat Action Roadmap, Tucson AZ 2024

* Indicates DeepL AI translation tool was used.
Gray shading indicates dedicated HAP was not found to be publicly accessible online.

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