

Heat Communication Guide for the Cities in South Asia

Acknowledgements

Authors:

Sunayana Sen, Resurgence Urban Impact Ltd.
Oscar Cartagena, Resurgence Urban Impact Ltd.
Ramiz Khan, Red Cross Red Crescent Climate Centre
Robert Powell, Resurgence Urban Impact Ltd.

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Copy-edited by: Patrick Fuller

Designed by: Eszter Saródy

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Introduction

Introduction

Heatwaves are periods of unusually hot and dry or hot and humid weather. They have a subtle onset and cessation period of at least two to three days duration and a discernible impact on human activities (WMO and WHO, 2015). Asia is one of the world's regions most affected by the impacts of extreme heat. Many people are at risk, as they live in densely packed cities with limited access to cooling mechanisms like air conditioning. In May 2015 alone, hot weather in India claimed the lives of more than 2,300 people as temperatures rose to 5.5°C (9.9°F) above average for nearly two weeks, predominantly in the southern regions of Telangana and Andhra Pradesh (Washington Post, 2015). Climate scientists indicate that deadly heat waves will become more common in South Asia and the region's exposure to heat stress will triple if no mitigation and adaptation measures are taken (American Geophysical Union, 2021).

Increasingly, more cities and states are developing Heat Action Plans (HAP) to address the impacts of high temperatures. A HAP provides a framework for the implementation, coordination and execution of extreme heat response activities (NRDC, 2016). HAPs include various elements of preparedness and response, including early warning systems and public communication. While city authorities and other government agencies undertake large-scale interventions to reduce extreme heat impacts at a city level, people can take steps at a household and community level to do the same. A public awareness campaign starting before the hot season will enable households to prepare ahead of time. As mentioned in Nastar (2020), effective public communication is critical to raise public knowledge about the dangers of heatwaves and the do's and don'ts for preventing heat-related deaths and diseases.

Effective heat communication is a multi-stakeholder process, as is the broader heat mitigation and adaptation plan. Stakeholders from government and civil society organisations together with climate experts and meteorologists, the private sector and the public, should be involved in the design process of a successful Heat Communication Plan (HCP) (ADB, 2017). Collaboration among stakeholders should be one of the guiding principles in this process, ensuring information is actionable and it reaches all inhabitants of a city, especially the most marginalised and underserved groups facing direct exposure to extreme heat. This guide explains the key components of designing a heat communication plan.

About this guide

This guide is designed primarily for staff within city governments who develop and implement adaptation and response strategies to reduce the impacts of extreme heat. This is a practical guide to understand the key components of an effective public communication plan: **access, relevance, understanding** and **action**. A set of recommended actions is included in each section. This guide can also be used by other organisations and institutions who work on reducing heat impacts on the public, involving large-scale communication.

Designing a Heat Communication Plan

Designing a Heat Communication Plan

A Heat Action Plan (HAP) is a key tool that engages multiple stakeholders in a city-system to anticipate, plan and respond effectively, to minimise the adverse impacts of extreme heat events. The [Heatwave Guide for Cities](#) is a useful resource for cities to start heat action planning. A critical component of a HAP is communication. This involves creating public awareness of heat impacts and how to manage them, and providing early warning before a heatwave occurs. An effective Heat Communication Plan (HCP) uses a multi-pronged approach and includes various stakeholders and types of information as illustrated in Figure 1 and Table 1.

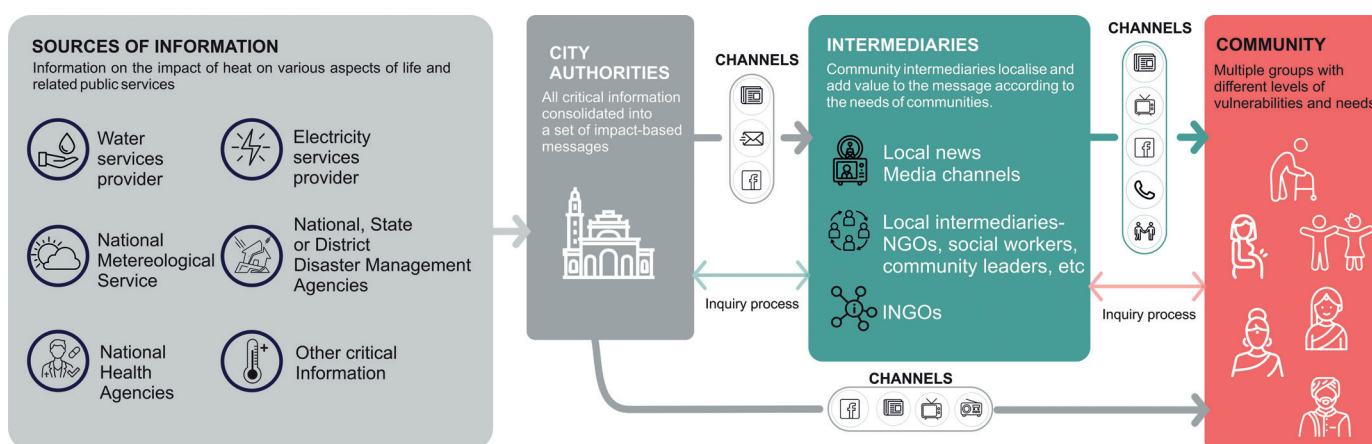


Figure 1: Outline of the way heat-related information flows from the source of information to the public through various communication channels

Table 1: Potential sources of information and the type of information provided by them

Type of Actor	Type of Information
National Meteorological Service International Meteorological Service Private weather providers	<ul style="list-style-type: none"> Meteorological information: daily forecasts, weekly forecasts, seasonal forecasts, extreme weather forecasts, alerts, early warnings
Public and private health agencies Medical experts	<ul style="list-style-type: none"> Impact on public health Impact on healthcare system Actions to help avoid/reduce impact on health
Insurance companies	<ul style="list-style-type: none"> Previous hazards and losses Future scenarios/forecasts on extreme heat events and impact
National, state or district disaster management agencies	<ul style="list-style-type: none"> Overall impact on the public Actions to help avoid/reduce impact
Water and Sanitation services provider	<ul style="list-style-type: none"> Impact on water supply Alternative or temporary services that are being provided Actions that can be taken to use water efficiently

Designing a Heat Communication Plan

Type of Actor	Type of Information
Electricity services provider	<ul style="list-style-type: none"> • Impact on energy supply • Alternative or temporary services that are being provided • Actions that can be taken to use electricity efficiently
Transport services provider	<ul style="list-style-type: none"> • Impact on transport system • Alternative or temporary services that are being provided • Actions to help avoid/reduce the impact on travel
Community and/or community intermediaries	<ul style="list-style-type: none"> • The impacts on various vulnerable groups (e.g. elderly people, people with chronic ailments, people who work outside in daytime, residents of informal settlements, etc.) • Actions that they usually take to avoid/reduce impacts

Co-production is a highly effective approach to ensure that communication activities reflect the needs and contexts of various sub-populations and that they include the most marginalised and vulnerable populations. Figure 2 highlights the key principles to follow for good co-production.

Figure 2: Ten principles for good co-production (Carter et al, 2019)



Designing a Heat Communication Plan

When designing a multipronged communication plan consider the four key elements of communication:

- **Access:** how will the public access the information?
- **Relevance:** is the information provided relevant to the needs of the population groups targeted?
- **Understanding:** is the information clearly understandable by all the targeted population groups?
- **Use:** can the public take action based on the information provided?

For each of the above, consider the different needs of different communities. The information and advice given to some vulnerable groups may need to be different from the information and advice given to others. Some communities will require more intensive and continuous communication than others. Some channels of communication may reach certain sections of the population more effectively than others. For example, older age groups may watch TV or listen to the radio intensively, whereas younger people may be easier to engage through social media. All these variables should be factored into the HCP.

Box 1:

Direct community engagement in Bangladesh using multichannel approach

BBC Media Action's Amrai Pari (Together We Can Do It) initiative collaborated with broadcasters in Bangladesh to create a reality TV show which showcased communities learning from their peers. Lack of knowledge of risks and associated adaptive actions were found to be key drivers of inaction, among other reasons. Amrai Pari's aim was to raise awareness and build networks to share information and showcase affordable, achievable solutions to everyday challenges around extreme weather.

The choice of TV as a communication channel leveraged the population's high access to TV. Nearly 90% of the population in Bangladesh has access to TVs and considers it to be a credible mass media system. Amrai Pari held workshops for the staff of community radio stations to enable a deeper understanding of local problems as they would be creating context specific programmes. Social media channels were also used to broadcast a series of short films on various urban specific risks, including heatwaves and fires. In remote areas with limited internet and mobile connectivity or access to local and mass media, BBC Media Action supported the Bangladesh Red Crescent Society to run community screenings of Amrai Pari. (Design for Impact Framework, 2018)

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A. Access

The choice of communication channels is dependent on multiple factors. Some of the defining factors are:

- **Socioeconomic characteristics:** such as level of education, level of income, type of home occupied, culture and religion.
- **Trust in the channel and source:** such as informal settlement populations which may have low trust in certain media networks based on their perception of the media's biases, but have higher trust in local NGOs they regularly work with.
- **Ease with which a channel can be accessed:** based on factors such as low cost and simplicity of technology.
- **Communication behaviours:** such as listening to the radio during commute or while at the workplace rather than home.

While the number of available communication channels is overwhelming, people tend to use only a small range of options on a regular basis. For instance, the average number of installed apps on a smartphone in India is 51. However, most people only use about 24 apps (Business Standard, 2018). City authorities can identify which communication channels are commonly used through data such as scale of ownership of mobile phones, TVs, etc.; the size of the population that uses various social media platforms and the popularity of particular radio stations and TV channels. This information is available through agencies and organisations such as national telecom governing bodies, academic institutions and private research agencies. Local NGOs or community representatives can help provide a more local understanding of the preferences of different communities.

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Box 2: Information Ecosystem Mapping

Tools like the Information Ecosystem Mapping (IEM) tool can be used to capture the way information flows dynamically amongst people and institutions, through various channels, and in various formats at a city or community level. A weather IEM mapping of a city can track the flow of information between information providers such as the country's National Meteorological Services (NMS) and private sector weather providers, and the key users of this information - communities, urban planners, media and responders. This mapping process can help unearth blockages in the flow of information due to issues such as trust, and reveal opportunities to use underutilised channels, identifying possible feedback loops to reach and engage communities. Using the findings from the mapping, a combination of channels can be selected through which to communicate extreme heat information.

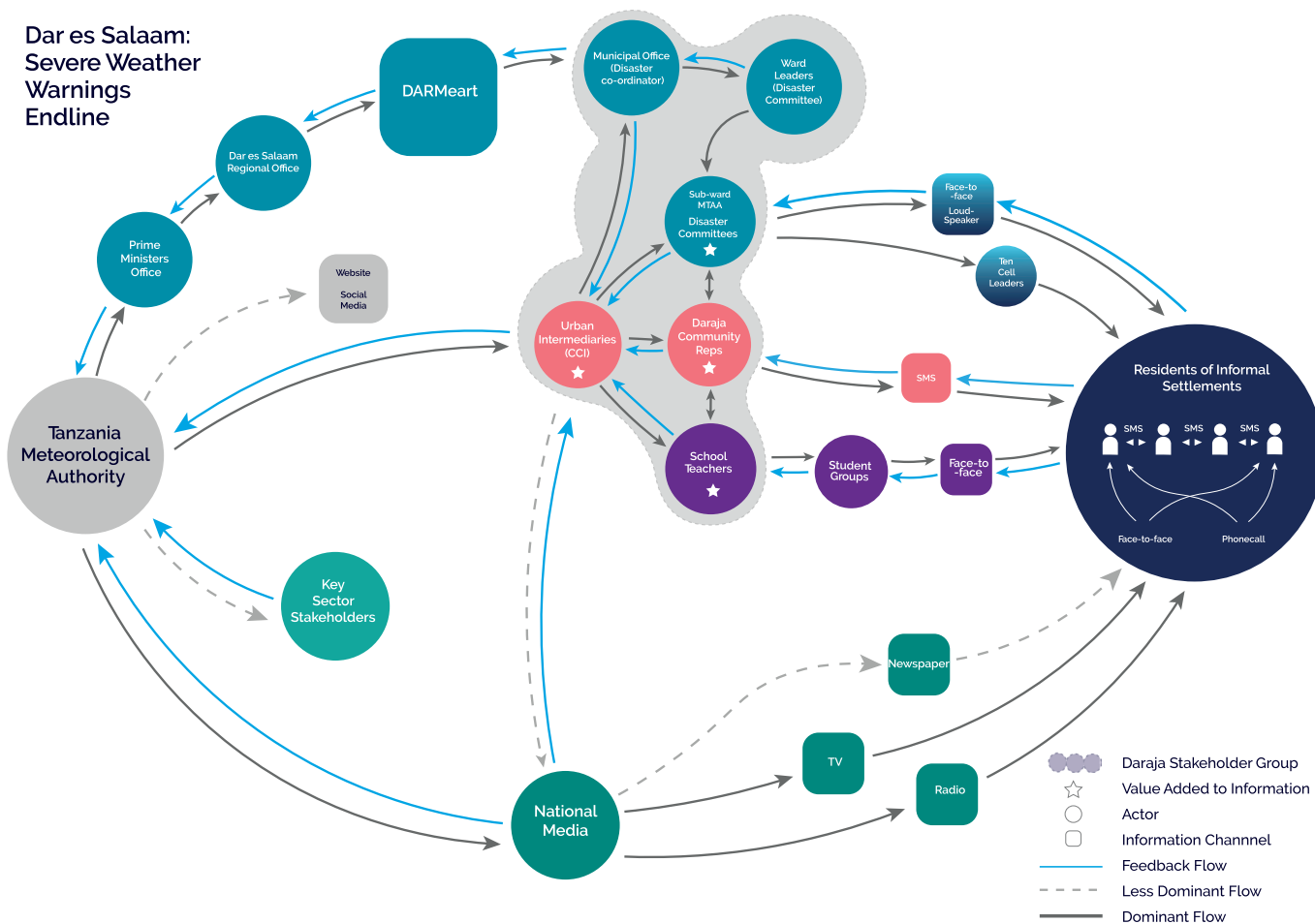


Figure 3: The Information Ecosystem Map of Dar es Salaam, Tanzania (2020) for severe weather warnings (DARAJA, 2020)

Designing a Heat Communication Plan

Access

Channel preferences based on community needs

An HCP should use channels that are preferred by the target population. These are typically the ones they use on a regular basis for their general information needs, rather than a specialised channel or platform for heat hazards or disasters. In the event of extreme weather particularly, the public gravitates towards commonly used and familiar platforms such as TV news channels, local radio, Facebook, WhatsApp and SMS to communicate with family and friends and to seek out any relevant information. People choose channels which are easy to access - technologically and financially - and which are familiar and trusted.

Channel preferences differ between sub-populations due to factors like their level of access to a particular channel and their trust in it. The combination of channels used to reach each group should reflect that group's usage preferences and communication behaviours. For example, consider the following questions:

- Which local and/or regional TV channels are preferred by older age groups versus younger age groups?
- Do people listen to the local and/or regional radio only during their commute, or do they listen to these stations while at home as well?
- What are the peak times in the day when most of the city's population will watch TV news?
- Is there a difference in the type of TV or radio shows that women watch/listen to versus men?

Understanding these behaviours will help in selecting the right channels for the right demographic groups, ensuring they are used at the most appropriate times to reach as many people as possible.

Box 3: Radio listening patterns

In most countries peak radio listening times are breakfast/morning time before departure for work/school, and early evening. For instance, in the United Arab Emirates (UAE) there are three radio listening peaks daily: 7 AM to 9 AM, 2 PM to 4 PM and 6 PM to 8 PM. The breakfast/morning peak time receives the greater reach. The majority of the audience listen to the radio while travelling. The overall radio listening behaviour changes during Ramadan due to fasting and prayer times. Peak listening time shifts during Ramadan, with a dip in reach around 7 PM, coinciding with Iftar timings. The evening peak time increased by two hours, from 6 PM to 10 PM instead of 6 PM to 8 PM. (Nielsen, 2018)

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Intermediaries as communication channels

Apart from public agencies such as the National Meteorological Service and the Disaster Management Authority, intermediary actors such as NGO outreach workers and social workers can also be considered as communication channels. They have a deep understanding of communities' needs and communities also have high levels of trust in them. They can add value by tailoring information to target audiences and ensuring that vulnerable people and caregivers are reached. Where communities have low trust in information that they receive through technology platforms or can't access it easily, intermediaries may be the best option. Coordination among all actors is important to keep the messaging consistent in a multi-stakeholder HCP.

Box 4: Weather Mtaani: A community-led weather communication system

Weather Mtaani is an initiative aimed at improving access to and the usability of weather and climate information produced by the Kenya Meteorological Department (KMD) for Nairobi's residents who live in informal settlements, like Kibera, Mathare, Dandora, Mukuru, Korogocho, Kangemi and others. Weather Mtaani has co-designed a Community SMS System that reaches hundreds of residents in Kibera.



Every Thursday, five community leaders from different neighborhoods in Kibera meet to summarise the weekly forecast released by the KMD. The summary templates were co-designed with KMD and other key stakeholders through multiple workshops prior to the start of the Weather Mtaani initiative. The summary is shared through SMS and on social media to other community leaders who again share the information with various other people, including teachers, pastors, workmates, neighbours, and family members. Additionally, Weather Mtaani leaders in Kibera have been organizing community activities where they share the seasonal forecast, the potential impacts and how to take preventive action.

Figure 4: Weather Mtaani worked with local artists to paint a wall mural in Kibera to create awareness of the importance of weather forecasts. (Weather Mtaani, 2020)

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Barriers to access

Consider the potential barriers or challenges that target populations may face in using the selected communication channels. Some of the key barriers could be around:

- **Financial cost** - It may be too expensive for some sections of the population to use regularly. For example, many people on low incomes who own a smartphone do not have constant access to mobile internet, because they switch off mobile data for most of the day to save money. Such people only access the internet on their device for short periods each day.
- **Complex technology** - It may require special skills or knowledge to use a technical application easily. For example, people who regularly use a social messaging app to exchange recorded voice messages, may not know how to open a PDF document sent as an attachment to a text message on the same platform.
- **Literacy** - Populations with low literacy may not be able to engage with content that's text-heavy and would prefer more visual or auditory content, which means they would avoid channels that only support text such as SMS.
- **Trust in a channel** - Some channels are trusted more than others due to perceptions of accuracy and truthfulness of general information on each channel. For instance, older age groups may have higher levels of trust in the information they access on Facebook, while younger age groups may have higher levels of trust in Instagram.
- **Language** – People find it difficult to engage with channels that predominantly use a language that they do not speak or has lots of technical jargon. This is a particular challenge in multilingual cities.

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1. Identify the most vulnerable population and potential caregiver groups. Engage with them to determine the information needs, such as preferred format, channel, etc. of each type of vulnerable group.
2. Engage with targeted communities to identify the most effective channels for communicating information to them rapidly and in a way they can understand easily.
3. Assess the channels through which these population groups currently access heat information or general weather-related information and identify what has worked well and what has not worked well.
4. Select and leverage communication channels that have already proved successful in reaching the communities to be targeted and identify any barriers to using them effectively.
5. Identify and enlist appropriate intermediary actors who can communicate heat information within communities in an effective and timely manner.
6. Select a combination of channels and intermediaries that will serve all the vulnerable communities effectively - but limit the number of overall channels to what is manageable by the city authority.

Tip: Communities will be able to react quicker to heat alerts if the heat-health early warning system uses the same communication channels as other types of early warning information, as communities will already be familiar with the channels and source of information.

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B. Relevance

A city's population is diverse in its level of exposure to extreme heat conditions and vulnerabilities. The strategies required to adapt to extreme heat and mitigate its impact may therefore vary from one community to another. While a homogenous heat information campaign may meet the needs of all vulnerable populations to some extent, each group requires further information that's specific to their context - spatial, financial, social, technological - to be able to take preventive actions that are relevant to their situation.

Localised impact information

In cities and urban areas there are micro-heat islands where temperatures are higher than in other areas. This significantly influences the level of exposure to heat hazard in certain areas. Communities benefit from localised heat information as it gives them a more accurate picture of the weather conditions in their immediate environment. Not all National Meteorological Services are currently able to provide hyperlocal weather forecasts, but any degree of localisation is beneficial.

Interconnected with localised weather forecasts is the contextualisation of how the weather will impact an area and its community. While a weather event may be the same (e.g. high temperature), the impact of it will differ from area to area depending on several factors such as the built environment, proximity to water bodies, relevant public infrastructure, household level cooling practices, individual vulnerabilities, etc. For instance, people living in housing structures built using metal sheets experience higher temperatures in the daytime. It may be useful to include the potential influence of such factors on heat impacts.

Intermediaries such as community organisations can aid this process by interpreting the heat forecast at a hyperlocal level. As intermediaries are embedded within the local community, people can engage with them easily to gain a deeper understanding of heat information - an interaction that most likely would not be possible with local authorities. A well-balanced impact description should be co-developed with stakeholders such as train operators and bus companies, which provide critical public services that may be affected by heat as well.

Context relevant advisory

Advice that is relevant to the local context should be provided in addition to the weather forecast and the localised weather impact. This enables communities to take relevant and realistic anticipatory actions. For instance, low-income communities should not be advised to use cooling fans or air conditioners if they have poor access to electricity and cannot afford to buy such equipment. Instead, they should be advised to adopt practical and affordable solutions that they can implement more easily such as using Khus or Vetiver curtains to cool the incoming air or painting the roof of their house white to reflect sunlight. Information about publicly accessible temporary cooling centres might also be useful.

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- 1.** Engage with the National Meteorological Service of your country, or your preferred weather information provider to develop localised heat forecasts. It is beneficial to include local communities and other relevant stakeholders in this process to ensure that the forecasting service is user-centric and inclusive.
 - 2.** Use heat and vulnerability maps and other information sources such as health data to identify the contexts (spatial, financial, social, technological) of the most vulnerable populations. This can be done through collaborating with community intermediaries.
 - 3.** Develop advice messages that are specific to each context. This enables the public to take relevant practical measures that are within their means.
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C. Understanding

People can act on heat information only if they are able to understand the information. Heat forecasts in their current form are often not easy to understand by those who are not trained or who have no significant experience in using such information. This is a recurring challenge globally and also applies to general weather forecasts. As the temperature in South Asia is generally warm around the year and invisible in nature (compared to floods for instance), the public has previously not understood the life-threatening risks associated with heatwaves. While the public is increasingly recognising these risks, there is limited familiarity with heat-related information and how to use it to take preventive measures.

Language and vocabulary used to describe weather conditions

Heat information should be communicated in the local language(s) of the population using simple and easy to understand words. The use of technical jargon should be limited, instead terms that the public is familiar with should be used, as without specialised knowledge of meteorology or relevant fields, it is difficult to fully comprehend the information. For example, instead of advising people to 'keep the body hydrated', explain that they 'need to drink more water, before feeling thirsty, because they will lose more water through their skin by sweating more'. For terms that cannot be substituted with simpler words, explanations should be provided which aid the user in interpreting the information correctly. Periodic training sessions, videos, or reference sheets, developed in collaboration with the National Meteorological Service, can help intermediaries understand technical terminology. This will enable them to interpret and communicate the information more effectively with their communities and audiences.

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Box 5: Terminology reference guide

A reference guide can be a useful tool to standardise the terminology used in communicating weather and climate information. This tool helps to communicate weather in a way that the public with varying levels of technical knowledge, can understand. This guide can be used by community intermediaries to cross-reference and clarify information they have received and adapt the messaging for further dissemination. It can be multilingual as well, especially in countries where the forecasts produced by the NMS may be in one language only. A multilingual guide (or multiple bilingual guides) can establish accurate and standardised translations for the main terms used to describe weather conditions.

This guide should be co-developed with all key stakeholders, especially community intermediaries and those such as the media, whose primary role is public communication. As this guide can be used by all intermediaries, it should be laid out in a clear and simple way including the following elements:

- Regular terms utilised in weather forecasts related to predictable weather events. These terms should be written in the local language.
- Icons and figures to support the terms for weather conditions listed. Icons should be simple and clearly related to the terminology.
- Explanation of terminology in all the possible and habitual languages.
- Key colour coding representing the risk and severity of the predicted weather condition. A regular form of coding is:
 - Red:** severe, potentially life-threatening weather events expected
 - Orange:** high-impact weather events likely
 - Green:** no severe weather events expected

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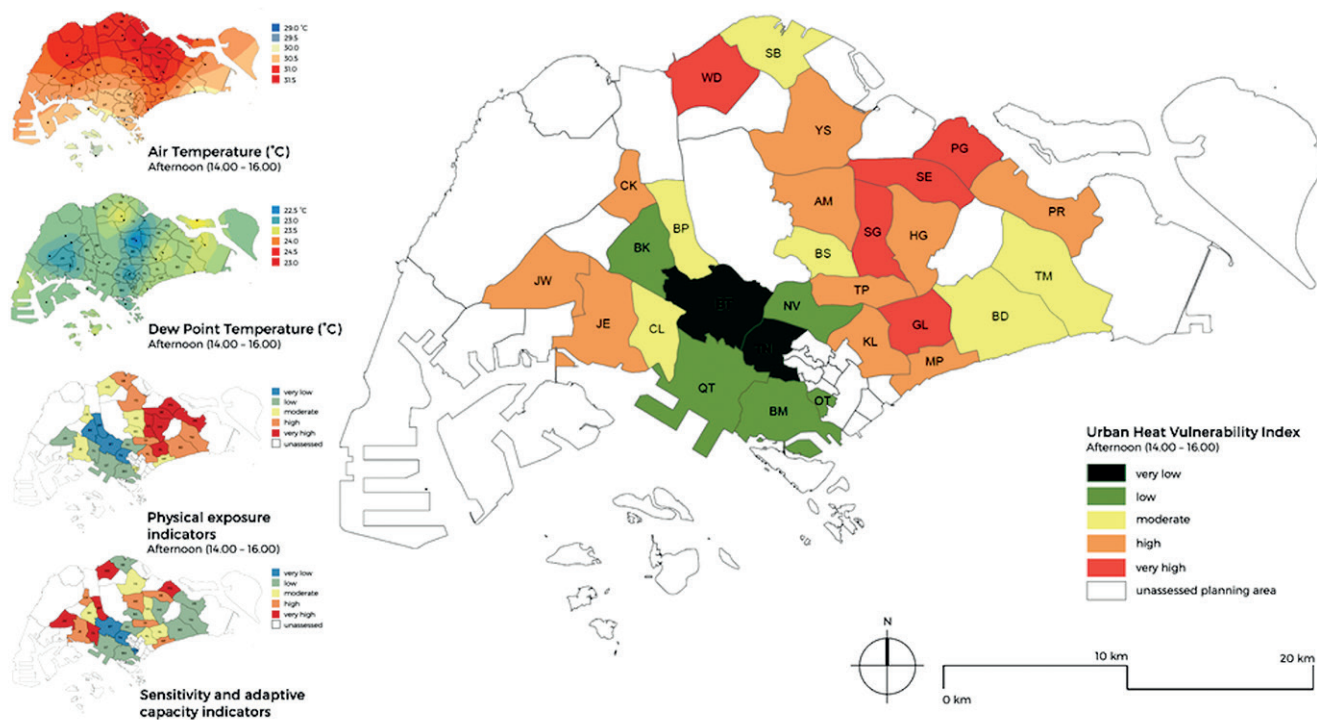
Information to Action

Format in which information is presented

The type of communication channel used will influence the format in which heat information is shared. Information can be shared in a fully visual, audio or text format. A combination of formats can serve a wider range of the population than a single format can. On social media and messaging platforms like WhatsApp, images, or images supported by text work better than text alone. Non-digital formats such as posters with strong visual content placed around the neighbourhood work well where there is low access to digital platforms. Written messages should be short and simple.

Colour coding on heat exposure maps, such as in Figure 6, is an effective way of communicating heat forecasts. The public is generally familiar with the concept of colour coding to indicate the severity of the situation as it is used in other weather warnings. It can be used to indicate temperature levels in regular weather forecasts as well as for heat alerts. This will help familiarise the public with the colour coding system for heat, enabling them to act quicker when they receive a heat alert. It can be used to generate heat maps which show the relative severity of heat in different areas of the city and highlight the location of “urban heat islands,” where temperatures are particularly high and dangerous.

Figure 6: Heat exposure map: The urban heat vulnerability at 2.00 pm - 4.00 pm in Singapore
(Cooling Singapore, 2020)



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The visual illustrations used should be easy for the local community to identify with. For example, an illustration that communicates household level preventive actions should represent local cultural practices, lifestyle and behaviours. If a poster is used to share information about mobile healthcare vans in the neighbourhood that treat heat-related illness, the illustrations should portray a typical neighbourhood of the city, the type of vehicles used there, people dressed in local attire, etc. Local reality should be portrayed as accurately and respectfully as possible. The public will be better able to understand the message if they are able to relate it to their own context.

Beyond the use of mainstream formats such as press releases, forecasts in newspapers, posters, public service announcements on radio and TV, etc., other innovative communication formats should also be considered.

Box 6: Information Education Communication (IEC) materials for public awareness

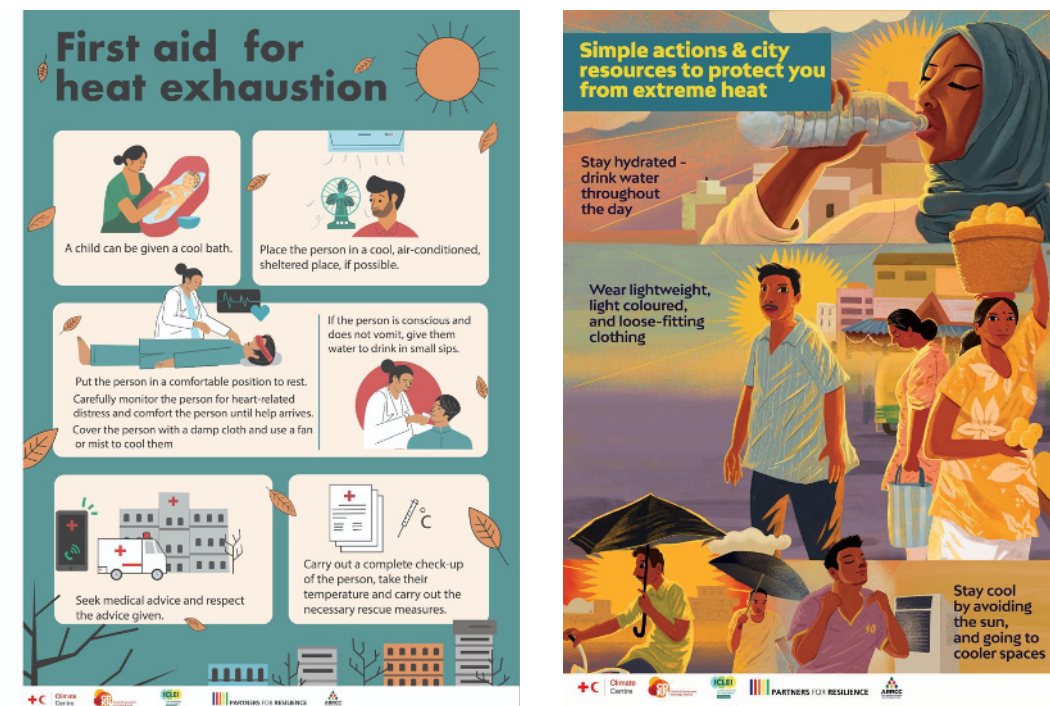


Figure 6: Posters giving advice on actions to take using illustrations can be placed in public areas like street walls, community notice boards, places of worship, etc. These posters can also be posted on social media or shared on any multimedia platform. (Posters Source: Red Cross Red Crescent Climate Centre)

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Box 7: Flash mob in Delhi to inform public about heatwave

A group of 15 young staff and volunteers from the Indian Red Cross Society (IRCS) used flash mobs as an eye-catching and effective way to inform people about how to prepare for heatwave temperatures that hit 43°C in Delhi in 2017. A total of eight flash mobs were held over four days in different parts of the city. Onlookers, including street vendors, shoppers, shop owners and passers by gathered as the flash mobbers made their moves. The messages were well received and often repeated verbatim.



The messages were simple: drink more water, keep your head covered, eat before you go out and “rest, rest, rest” between 12.00 noon and 3 PM – the hottest hours of the day. The jingles and moves for the flash mob were jointly created by the group themselves and facilitated by the Red Cross Red Crescent Climate Centre. Theatre artist Dilip Shankar and Bharatnatyam dancer-cum-vocalist Radhika Kathal each spent two hours with the group, teaching them how to use their bodies and voices, helping them to break down cultural and social barriers.

Figure 7: Volunteers from Indian Red Cross Society performing a flash mob in Delhi.

(Picture Source: Aditi Kapoor/ Red Cross Red Crescent Climate Centre)

Impact description

People need to understand how high temperatures will impact them at an individual and household level. Most of the information in heat forecasts is meteorological. Some countries have been using a ‘feels-like’ description of weather conditions alongside meteorological information. For example, while the temperature as captured by weather instruments might be 42°C, other weather conditions such as wind and humidity levels and material of the surrounding buildings may make it ‘feel’ like it’s colder or warmer than 42°C. This style of description can be a useful aid for people.

A combination of hazard mapping, heat modelling, and localised impacts can be used to develop impact descriptions of common high temperature scenarios in hot spots across the city. [See Section B: Relevance.] People interpret a forecast through the lens of their past experiences of similar temperatures. This style of description is likely to drive action. The impacts on public services should also be included as it helps people understand the scale of impact. For instance, water supply may be reduced, there may be electricity blackouts, transport systems may be disrupted by high temperatures, railway lines may buckle and tarmac on the roads may melt.

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Inquiry mechanism

A dialogue process with city authorities and providers of other key public services will provide the media and community intermediaries an opportunity to seek clarifications about an upcoming heat event. Currently intermediaries receive a press release but are unable to fully understand the implications of the forecast. This limits their ability to communicate effectively to the public. In addition to providing training and reference materials, a press briefing where journalists can ask questions following the issuance of heat alerts may be useful. A virtual press briefing, using digital platforms like Zoom as an alternative to a face-to-face press briefing, may be time and logistically efficient in some countries. Beyond specific heat events, an online inquiry mechanism (such as inquiry forms) for information on heat throughout the hot season will aid in seasonal planning for intermediaries. However, this mechanism may not be as timely as a press event.

Box 8: Dhaka's Interactive Voice Response (IVR)

In the city of Dhaka, the Disaster Management Bureau has implemented an Interactive Voice Response (IVR) system to support information and hazard warning dissemination (International Organization for Migration, 2020). The IVR mechanism enables the public to call an assigned telephone number to access information regarding the weather and early warning information throughout the city authorities' different stages of emergency response (Department of Disaster Management, 2011). The IVR was used prior to and during landfall of Cyclone Amphan in 2020, when at-risk populations could call the designated telephone number to identify shelter, livelihood, and sanitation and hygiene opportunities to meet their needs (International Organization for Migration, 2020).

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1. Translate/develop heat forecasts and other relevant information into local language(s) of the population.
 2. Simplify the terminology that is used in heat information. Use simple and familiar words. If some technical jargon cannot be replaced, provide an explanation.
 3. Use a variety of channels and formats to communicate heat information to make it inclusive and accessible to all sectors of the city's population.
 4. Ensure that messaging is consistent with the cultural practices, lifestyle, and behaviours of local communities.
 5. Provide impact descriptions along with heat forecasts to help the public understand how the heat may affect them, enabling people to take appropriate action. All impact descriptions should be relevant to the local context.
 6. Co-develop impact descriptions with all stakeholders, including community members or representatives, to provide well-balanced impact descriptions that cover impacts across various sectors.
 7. Set up an inquiry mechanism around heat alerts, such as a multi-stakeholder press briefing and online inquiry form submissions, to give the media and community intermediaries the opportunity to seek clarifications and gain a deeper understanding of the impacts of the upcoming extreme heat event.
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The aim of heat communication is to equip communities with the relevant information required to reduce the adverse impacts of high temperatures. Heat communication involves:

- a. An ongoing campaign to educate people and raise their awareness
- b. Seasonal reminders during the approach to each hot season
- c. Ad hoc alerts or warnings whenever a heatwave is imminent

In all three instances, communities not only want heat forecasts, but also advice about actions to take at household level, such as how to stay cool. Seasonal education and awareness using heat-health Information Education Communication (IEC) materials such as posters should start before the hot season begins, whereas alerts and warnings will be triggered by the heat thresholds [See Table 2].

Table 2: Heat-health Warning System levels based on the time until the event or magnitude during the event (Heatwaves and Health: Guidance on Warning-System Development, 2015)

	Examples of nomenclature	Description
Pre-alert levels (temporal)	Seasonal vigilance	• Activated during the whole summer season, though no heat event forecast.
	Outlook	• A heat event is expected during the next 3–5 days.
	Watch (warning)	• A heat event is expected during the next 24-28 hours.
Alert levels (severity)	Heat alert, Heat advisory Warning, Severe heat warning	• Moderate heat event occurring or imminent.
	Excessive heat warning Extreme heat alert, Heat emergency, Maximum mobilization, Extreme weather warning	• Significant heat event occurring or imminent.

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Continuous heat communication

Extreme heat in South Asia is often seasonal and predictable. Preparation for heatwaves take place throughout the year, with intensive activity closer to the hot season. Similarly, heat communication activities should start before the hot season and continue throughout it. Public awareness prior to the hot season enables communities to take structural actions such as retrofitting their houses or offices with cooling mechanisms, building water storage methods, etc. Heat alerts issued shortly before a heatwave occurs enable communities to take short term preventive actions such as planning outdoor activities around peak temperatures, adjusting their diet, etc. The implementing city authority should prepare a calendar of heat communication activities based on the HAP timeline of activities. This should be connected to threshold triggers for actions. A lot of the recommended household level actions may already be familiar to the local population. However, communication on actions to take should be continued throughout the hot season to promote the strong recall of key messages.

Information on seasonal services

Increasingly city authorities are taking anticipatory action to reduce heat impacts by providing seasonal services and infrastructure, which are particularly helpful for the vulnerable population. For example, some cities set up temporary cooling shelters during the hot season that are free and accessible to the public. Connecting these services to heat forecasts and informing the public about them e.g. telling people where the cooling centres are located and how to make best use of the facilities they provide, will enable the public to utilise these services. NGOs and community organisations also provide heat relief interventions and arguably have a greater ability to reach local communities. Information on heat mitigation actions provided by such trusted intermediaries should be incorporated into the HCP.

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Composing an extreme heat message

The City's heat warning system should build upon the Common Alerting Protocol (CAP). CAP standard is key to supporting standards-based, all-hazards, all-media public alerting. "Key benefits of CAP include reduction of costs and operational complexity by eliminating the need for multiple custom software interfaces to the many warning sources and dissemination systems involved in all-hazard warning" (Oasis, 2010). CAP lists nine elements to include in an alert: sender name, sent, identifier, status, message type, scope, category, message template and priority (see [Annex B](#) for more details on the nine elements). The content of the alert message should focus on the following key types of information:

- 1. Weather forecast**
- 2. Areas which will be most affected**
- 3. Potential impacts**
- 4. Advice on actions to take**

These four key types of information can be kept short or elaborated on depending on the communication channel and limit on the length of the message [See Table 3]. For example, in a press release format or post on a web page each type of information can be elaborated. By contrast, in an SMS alert the message must be kept short giving the most crucial information only. Producing a short message in addition to a long message has the added benefit of being shared by media in their limited space formats (e.g. news ticker) without the meaning getting distorted. Create a few message templates for the selected communication channels during the planning process. When the early warning system is triggered, the information can be quickly fitted into these pre-designed templates. Co-produce these messages with the stakeholders, especially the communication intermediaries to ensure that the messages are consistent throughout the system even when it is adapted to different audiences and local contexts. Finally, the message should be kept simple, less technical, location specific, timely and in local language(s), using easy-to-understand formats.

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Table 3: Key types of information to include in an extreme heat message

Type of information	Long message	Short message
1. Weather forecast	<ul style="list-style-type: none"> • Maximum and minimum temperatures • ‘Feels-like’ temperatures • Humidity • Probability of rain • Hottest time of day • Onset of high temperatures/extreme heat event • Duration of high temperatures/extreme heat event 	<ul style="list-style-type: none"> • Duration of high temperatures/extreme heat event
2. Areas which will be most affected	<ul style="list-style-type: none"> • Heat exposure map using a colour gradient to show levels of exposure • Description of the types of areas which may feel very hot (e.g. slums) 	<ul style="list-style-type: none"> • List of most affected areas • If using a multimedia channel like Twitter, a heat exposure map can be added to the short text message
3. Potential impacts	<ul style="list-style-type: none"> • List of the potential impacts across various aspects of daily life and city-system • Severity of the impacts 	<ul style="list-style-type: none"> • List of the most likely and relevant impacts
4. Advice on actions to take	<ul style="list-style-type: none"> • Actions that can be taken at household level • Actions that can be taken at workplaces • Actions that can be taken at the community level • List of heat specific public services provided by the city authority and where, how, and when to access them • Heat specific services that are provided by intermediary partners (NGOs/ community organisations) - where, how and when to access them • Emergency contact numbers such as toll-free numbers for ambulance, mobile healthcare centres, etc. 	<ul style="list-style-type: none"> • List of most common actions to take • Emergency contact numbers such as toll-free numbers for ambulance, mobile healthcare centres, etc.

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Box 9: Sample short heat alert message triggered by an orange threshold¹

Sender: City Council

Sent on: 16-05-2018 08:00 AM

Identifier: 042601#

Status: Actual: actionable
by all message recipients

Scope: Public

Category: Meteorological

Message: Orange alert for heatwave between 1:00 PM on Tuesday 17 May and 11:59 PM on Thursday 19 May. Likely to impact areas in the central business district and informal settlements in the east zone. This heatwave can be dangerous, especially for the very young or very old or those with chronic disease. It poses high risk of heat exhaustion and heatstroke. There may be power cuts and ongoing pressures on water supply. Stay out of the sun. Keep your home as cool as possible. Drink water regularly. For further advice on how to lower heat risk visit www.city.gov/heathealth or call 000 or contact your local health clinic.

Urgency: Expected

Severity: Severe

Certainty: Likely

If the alert is shared through multimedia platform like Twitter or Facebook, a heat vulnerability map and an illustration showing preventive actions can be added:

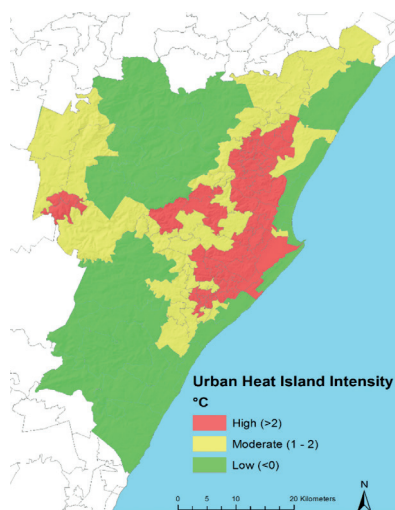


Figure 8.i. (Left): Example heat vulnerability map of Durban, South Africa (Source: C40 Knowledge Hub)

Figure 8. ii. (Right): Informational poster on preventive actions (Source: Red Cross Red Crescent Climate Centre)

¹ Common Alerting Protocol (CAP) has been elaborated in the Annex C

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Feedback mechanism

Lastly, a feedback mechanism is beneficial to assess if the city authority's heat communication efforts have been effective. This will help to make changes in the HCP if needed. Feedback can be gathered after every extreme heat event, or at least at the end of the hot season. A simple feedback form on the city authority's website shared on social media can be used for this. It can also be shared with specific target groups. Community intermediaries can help gather feedback from local communities using surveys and focus group discussions, especially where there is limited access to digital platforms.

Actions

- 1. Prepare a list of actions that the public can take to reduce the adverse impacts of extreme heat. Consolidate the key details of heat mitigation interventions including: a description of the intervention, who is providing the intervention, who it is targeted at, how it can be accessed by the targeted groups, when the intervention should begin and end, contact details, etc. Prepare IEC materials with this information to share with the public.**
- 2. Create a timeline of communication activities aligned with HAP activities and threshold triggers. For effective heat communication, i.e. the public is able to take actions in a timely manner and is successfully able to avoid or reduce heat impacts, the seasonal awareness outreach should begin before the start of the season and continue until the season's end.**
- 3. Co-produce awareness messages and alert messages with key stakeholders such as public health agencies, key media, community organisations, etc. The content of alert message should focus on the following key types of information:**
 - a.** Weather forecast
 - b.** Areas which will be most affected
 - c.** Potential impacts
 - d.** Advice on actions to take
 - e.** Who to contact for further help and information
- 4. Create long and short versions of an alert message to be used according to the limitations of various communication channels. Keep the message consistent across all channels.**
- 5. Gather feedback from the public on the effectiveness of heat communication. The feedback survey can be implemented in collaboration with community intermediaries using digital platforms. The resulting information should be used to improve the communication plan for the next extreme heat event or the next hot season.**

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ANNEX A: Using Information Education Communication (IEC) messages to design a heatwave campaign

IEC Messages	Target Audiences	Probable content	Possible strategic locations to use
Extreme heat is deadly	<ul style="list-style-type: none"> • General public 	<ul style="list-style-type: none"> • Extreme heat kills people every year. Protect yourself from the heat. 	<ul style="list-style-type: none"> • Schools • Hospitals • Bus stops, railway stations, airports
Who is at risk from extreme heat?	<ul style="list-style-type: none"> • General public 	<ul style="list-style-type: none"> • Older adults (over 65) • Individuals with chronic medical conditions e.g. heart disease, lung and kidney conditions, diabetes and mental illness. • Children under five years old • Pregnant and lactating women. • Outdoor workers (incl. traffic police, security guards, street vendors, construction workers, etc.) • Individuals with disabilities • Individuals with learning difficulties. • Overweight and obese individuals. • People living in densely built areas. • Homeless people, migrants, and refugees. 	<ul style="list-style-type: none"> • Road junctions, marketplaces • Parks, children's playgrounds • Construction sites • Offices or other institutional buildings • Shopping malls • Community places, religious centers • Stadiums • Auto rickshaw / rickshaw / tuk tuk (three-wheeler) stands • Areas near to slum areas
You can prevent heat deaths	<ul style="list-style-type: none"> • Younger people / School children 	<ul style="list-style-type: none"> • Be a good friend/neighbour. • Reach out to your grandparents and elderly neighbours. • Give them a phone call or pay them a visit. • Check to see if they can access water to stay hydrated and have a way to cool themselves when it gets very hot. • If they seem disoriented or confused, encourage them to seek medical attention. • These simple actions can save lives! 	

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IEC Messages	Target Audiences	Probable content	Possible strategic locations to use
How to recognise the signs of heat illness	<ul style="list-style-type: none"> Younger people 	<ul style="list-style-type: none"> Heat exhaustion: <ul style="list-style-type: none"> Faint or dizzy Excessive sweating Cool, pale & clammy skin Rapid, weak pulse Muscle cramps Do: Get to a cooler place. Drink water if fully conscious. Take a cool shower or use cold compresses. Heat stroke: <ul style="list-style-type: none"> Throbbing headache May show signs of confusion High body temperature Red, hot and dry skin Rapid, strong pulse May lose consciousness Do: Call for emergency help and take action to cool the person until help arrives. 	<ul style="list-style-type: none"> Schools Hospitals Bus stops, railway stations, airports Road junctions, marketplaces Parks, children's playgrounds Construction sites Offices or other institutional buildings Shopping malls Community places, religious centers Stadiums Auto rickshaw / rickshaw / tuk tuk (three-wheeler) stands Areas near to slum areas
Protect elderly people from extreme heat	<ul style="list-style-type: none"> Elderly people 	<p>Heat is dangerous – older adults are at greater risk. Chronic health conditions (e.g. heart, lungs, kidney diseases) increase your risks.</p> <p>Don't worry, you can take simple and cost-effective actions.</p>	
Protect construction workers from extreme heat	<ul style="list-style-type: none"> Construction workers and employers 	<p>Water - Rest - Shade</p> <p>If you are working outside:</p> <ul style="list-style-type: none"> Drink water regularly, even if you're not thirsty! Take lots of breaks to rest, and find shade if you can. Try to work outside early in the morning or late in the evening when it's cooler. Discuss with employer to modify work schedules. 	

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IEC Messages	Target Audiences	Probable content	Possible strategic locations to use
Protect children from extreme heat	<ul style="list-style-type: none"> • Parents 	<ul style="list-style-type: none"> • Drink lots of water • Wear light weight clothing • Avoid playing outside during the hottest time of the day • Wear sunscreen 	
Simple actions & city resources to protect you from extreme heat	<ul style="list-style-type: none"> • General public 	<ul style="list-style-type: none"> • Drink water throughout the day • Wear lightweight, light coloured and loose-fitting clothing • Stay cool by avoiding the sun and going to cooler spaces 	

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ANNEX B: Common Alerting Protocol (CAP)

The Common Alerting Protocol is a standard format for warnings and emergency alerts. When alerting the public, the information must reach vast numbers of people, which is why it also requires multiple dissemination methodologies. It is key that all recipients access the same key warning facts. According to CAP, alert communications must include the following nine elements: sender name, sent, identifier, status, message type, scope, category, message template and priority (OASIS, 2010; Global Disaster Preparedness Centre, n.d.).

The nine elements of CAP

- Sender name
 - State the alerting authority (e.g. city authority, domestic or international hydrometeorological institution)
 - Include an email for further contact and clarifications
 - Sent
 - State the date of the message
 - State the time of the message
 - Identifier
 - Provide a unique identifier for each CAP message (e.g. ID number)
 - Status
 - State the message status:
 - Actual: actionable by all message recipients
 - Exercise: actionable by all exercise participants
 - System: messages to support alert network internal function
 - Test: technical test, to be disregarded by recipients
 - Message type
 - State the message type:
 - Alert: initial information that requires recipients' attention
 - Update: updates and that supersedes referenced message
 - Cancel: cancels referenced message
 - Scope
 - State the scope of the message to denote the intended distribution:
 - Public: dissemination to the general public
 - Restricted: dissemination limited to users with particular requirements
 - Private: dissemination to specific addresses
-

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- Category
 - Provide an alert category:
 - Geo: geophysical
 - Met: meteorological, including floods
 - Safety: emergency and public safety
 - Security: military, law enforcement, local and private security
 - Rescue: rescue and recovery
 - Fire: fire rescue and suppression
 - Health: public health
 - Infra: telecommunications, utilities, and other infrastructures
 - Other: other events
 - Message template
 - Provide a headline, including hazard and alert area
 - Give a description of the risk information
 - Provide an instruction or call to action for targeted recipients (e.g. evacuate)
 - Priority
 - State the priority of the alert:
 - Urgency: Immediate, Expected, Future, Past or Unknown
 - Severity: Extreme, Severe, Moderate, Minor or Unknown
 - Certainty: Observed, Likely, Possible, Unlikely or Unknown
-

Resources

[Red Cross Climate Centre Heatwave Guide for Cities](#)

[Heatwaves and Health: Guidance on Warning System Development.](#)

[City Resilience Toolkit](#)

[Global Heat Health Information Network](#)

[Common Alerting Protocol](#)

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