COOL DOWN KANPUR

CREATIVE AWARENESS CAMPAIGN FOR HEATWAVE IMPACTS IN KANPUR

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RSD15
SHADES OF SYSTEMIC DESIGN
TURIN, ITALY. 2026

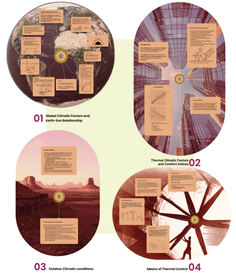
Heatwave Impacts in Kanpur

A heatwave is a protracted period of extremely high temperatures that are far higher than the typical climate range for a location. It typically lasts for two or more days.It is one and is frequently accompanied by high humidity, which makes the weather feel even more oppressive. heatwaves can be dangerous because they can cause heat-related illnesses like heat exhaustion and heat stroke, as well as worsen existing health issues. They can prevent cooler air masses from entering, and suppress cloud formation. This results in a self-reinforcing dome of heat that can remain stationary over large geographic areas for days or even weeks.

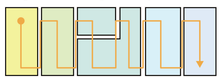
Heatwaves are no longer uncommon anomalies in the context of accelerating global warming. rising greenhouse gas concentrations have drastically changed the planet's baseline temperature, making extreme heat events more common, intense, and prolonged than at any other time in recent history. This escalating trend is a direct consequence of human activities, primarily the burning of fossil fuels. The impacts of these "heat waves," mean heat island effects, soil moisture depletion, albedo reduction, and atmospheric circulation. We explore all these in Kanpur to propose ways to simplify thermal extremes, especially in densely populated cities where concrete and asphalt continuously absorb and radiate heat.

Understanding heat science and their parameters

The natural energy balance between incoming solar radiation and outgoing thermal radiation is maintained by the Earth. According to thermal physics, all objects with a temperature above absolute zero emit energy in the form of electromagnetic radiation, which can travel through space. The planet's average temperature rises as a result of this energy imbalance, changing the distribution of temperatures in numerous overall. This means that extreme heat events that were previously uncommon now happen much more frequently and intensely.



Navigation towards the synthesis map



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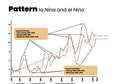
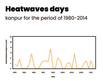


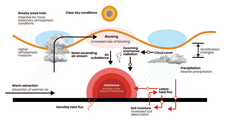
Heatwaves days

kanpur for the period of 1980-2014



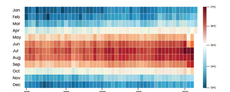
The analytical process began with focusing on climatic factors and the science of heat occurrence. Through secondary resources, the long-term climatic data of Kanpur was collected through secondary research to understand the extreme heat conditions in the city.

Occurence of Heatwaves



Heatwaves are caused by a confluence of surface-level and atmospheric phenomena. Usually, a prolonged high-pressure system—often referred to as a "heat dome," settles over an area, compressing the air, warming it, and preventing the development of clouds. The ground's surface is then heated by the intense sunlight. Soil moisture is depleted by this heat, which also reduces evaporative cooling. Urban areas, with little vegetation, and large built- up areas that absorb and revitalize heat, also referred to as the urban heat island effect, all exacerbate this effect.It places the Kanpur. By increasing baseline temperatures and changing monsoon patterns, climate change exacerbates these conditions and increases the frequency and duration of such intense heat events.

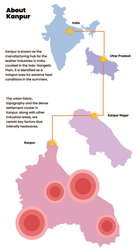
Monthly Global Avg. Temperature



This refers to the average monthly surface temperature of the Earth, which is determined by integrating data from the land and the ocean. According to NASA, the global average temperature has increased by approximately 1.1°C since the late 19th century, with the majority of this warming occurring in recent decades. In January 2024, for instance, the combined land and ocean temperature was likely around 1.29°C higher than pre-industrial levels, and in March 2025, worldwide temperatures were likewise noticeably higher. Furthermore, global temperatures have been rising at a rate of about 0.2°C per decade since the 1970s. Regional heatwaves are also becoming more frequent and severe. For example, regional heatwaves in several parts of India have resulted in temperatures that are among the hottest in the world, surpassing 49–50°C. These growing monthly averages show that high-heat events are becoming more frequent and that global warming is escalating.

DESIGN PROCESS

About Kanpur



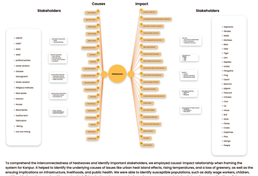
Kanpur is known as the manufacturing hub for the region. The Kanpur Nagar is located in the Indo-Gangetic Plain, it is identified as a densely populated urban heat conditions in the summers.

The urban fabric, topography and the dense built environment of Kanpur, along with other natural factors have historically heatwaves.

Peak areas with heatwaves in kanpur

Certain peak heat zones were identified across Kanpur through temperature mapping, highlighting areas with the highest thermal intensity. These hotspots were predominantly located in densely built-up, industrial, and low-vegetation zones, where surface and air temperatures consistently remain elevated, making them priority intervention points for the campaign.

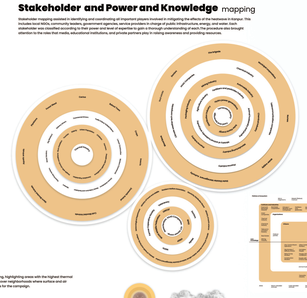
Causes and Impact map for heatwaves



To comprehend the interconnectedness of heatwaves and identify important stakeholders, we employed causal- impact relationship when framing the system for Kanpur. It helped to identify the underlying causes of issues like urban heat island effects, rising temperatures, and a loss of greenery, as well as the resulting implications on infrastructure, livelihoods, and public health. We were able to identify susceptible populations, such as daily wage workers, children, and the elderly, and comprehend how systemic deficiencies in water access, shade, and awareness exacerbate heat stress by connecting these findings.

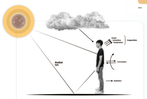
Stakeholder and Power and Knowledge mapping

Stakeholder mapping assisted in identifying and coordinating all important players involved in mitigating the effects of the heatwave in Kanpur. This includes local NGOs, community leaders, government agencies, service providers in charge of public infrastructure, energy, and water. Each stakeholder's role, power, and influence on the system was evaluated. This mapping ensured that the campaign was inclusive and targeted through attention to the roles that media, educational institutions, and private partners play in raising awareness and providing resources.



Solar Radiation affect on human body

Heat is continuously produced by the body. Most of the biochemical processes involved in tissue metabolism, including the contraction of muscles, release heat as a by-product. The primary energy sources of the body are supplied from consumption and digestion of food. As soon as the sum of thermal balance is more than zero, maximum adjustments will take place blood circulation

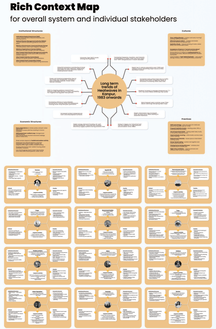


Solar radiation is the energy that is emitted by the sun. When the body's core temperature is elevated and all forms of heat loss processes are accelerated. Conversely, if the sum of the above equation is less than zero, the blood circulation to the skin is reduced, skin temperature is lowered and the heat loss processes are slowed down.

Entities affected during Heatwaves

Rich Context Map

for overall system and individual stakeholders



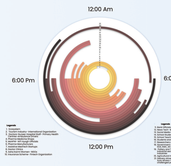
Stakeholder Dimensions

listening to the system

Stakeholder dimensioning involved analyzing stakeholders across multiple dimensions such as influence, interest, vulnerability, and capacity within the heatwave system. This helped us understand how strongly they are affected by heatwaves and how much power they hold to drive change.

Stakeholders' Journey Mapping understanding the working system and scenario

Stakeholders' Time Map



Urgency-Importance matrix

ZIP Analysis and their trends on system

Metophorical Representation

The main system metaphorically depicted as a dormant volcano. It symbolized the gradual, often invisible buildup of heat and the potential for sudden, catastrophic events. The volcano's chamber represents the vulnerabilities that go unnoticed until they materialize as extreme heat events. The volcano's stratified structure also influences our research framing the visible "flora" at the surface represents immediate, observable impacts like heat exhaustion and strokes, while the deeper layers symbolize underlying factors like myths, beliefs, and systemic forces shaping public perception and response. The multi- layered visual storytelling evoked a sense of urgency while also raising awareness, encouraging viewers to look beyond the surface and engage with the complexities of heatwaves. It also helped in visually framing empathy, critical reflection, and a more informed, collaborative approach to resilience.

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Standards for campaign

Guidelines for campaign in India

Target Area in Kanpur

The "Cool Down Kanpur" campaign targets high-risk areas across Kanpur such as dust markets, transit hubs, industrial and labour zones, and densely populated urban cores. These zones face exposure to intense and access to cooling is limited. These areas are prioritized based on factors like land use, the density and community centers are also included to expand outreach, ensuring the campaign reaches the most vulnerable populations effectively.

Sustainable Development goals

Deliverables and Budget for campaign in Kanpur

The campaign deliverables include educational materials, water bottles, cooling kiosks, solar distribution points, digital alerts, and community workshops designed to reach over 1 lakh people. The budget is structured to cover posters and billboards, prompters and social media campaigns. Strategic partnerships and sponsors help optimize expenses and expand impact across vulnerable communities effectively.

Campaign Materials posters, billboards, social media posts, phone Alerts

Cool Down Kanpur's campaign posters and materials were thoughtfully created to represent Kanpur's visual culture and communication preferences. The posters use bold, high-contrast visuals and familiar cultural references to grab attention quickly in busy urban environments. The regional language, Pracht visuals, straightforward messaging, and captivating characters were used to make the content more kid- friendly.

Brochures, social media posts were created by fusing eye-catching designs with educational content. The ad to-do instructions and aesthetically pleasing. Engrained retention of heatwave safety precautions.

GOVERNMENT MESSAGES

Conclusion

Beyond the temperature, cognitive behavior, access, infrastructure, and day- to- day routines. Cool Down Kanpur is designed to be flexible, scalable, and easy to adapt, while integrated into day- to- day activities. Whether through community- driven communication, real networks, or public venues, the design approach focuses on creating touchpoints that are visible, tailored, and noticeable and that can alter depending on the environment.

with IMPACT does way
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DATA IN RELATION | Visualising Complexity, Interdependence, and Systemic Change