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Urban Heat Island Mapping Market Forecasts to 2032 – Global Analysis By Component (Data Sources, Software & Tools and Service), Technology (Remote Sensing & Thermal Imaging, LiDAR, Artificial Intelligence & Big Data Analytics and Other Technologies), End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Urban Heat Island Mapping Market is accounted for $1.5 billion in 2025 and is expected to reach $3.9 billion by 2032 growing at a CAGR of 14.8% during the forecast period. Urban Heat Island (UHI) mapping is the process of identifying and analyzing areas within cities that experience significantly higher temperatures than surrounding rural regions due to human activities and infrastructure. It involves using remote sensing, satellite imagery, GIS tools, and ground-based measurements to capture spatial variations in land surface or air temperature. UHI mapping helps visualize hotspots created by dense buildings, reduced vegetation, and heat-absorbing materials like concrete and asphalt. This mapping is crucial for understanding the impacts of urbanization on climate, guiding sustainable urban planning, and improving energy efficiency, mitigating health risks, and developing strategies for climate resilience.

Market Dynamics:

Driver:

Tech advancements in remote sensing & drones

Real-time data from satellites and UAVs is enabling granular analysis of heat

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distribution. Integration with GIS platforms supports targeted interventions in urban design. AI-powered tools are streamlining data interpretation and expanding coverage. Municipal agencies are adopting these technologies to enhance climate resilience. These innovations are elevating UHI mapping as a core component of sustainable urban planning.

Restraint:

Complexity in data integration & standardization

Differences in resolution and measurement techniques across platforms create analytical gaps. Limited compatibility with existing urban databases slows operational use. Smaller cities may lack the infrastructure to manage multi-source datasets. Absence of unified protocols hinders cross-regional comparisons. These challenges are limiting broader implementation.

Opportunity:

Smart city initiatives & environmental awareness

Cities are deploying sensor networks and geospatial platforms to monitor thermal stress. Integration with green infrastructure strategies is improving energy efficiency and public health outcomes. Agencies are using heat data to guide interventions for vulnerable populations. Collaborations between tech providers and urban planners are accelerating solution deployment. These dynamics are fueling market expansion.

Threat:

Lack of legal mandate or regulatory framework

Absence of standardized requirements limits integration into planning and zoning regulations. Without enforcement mechanisms, thermal mitigation remains discretionary. Private sector participation is constrained by unclear compliance expectations. Policy fragmentation reduces consistency in implementation. These factors threaten long-term institutional support for UHI mapping.

Covid-19 Impact:

The Covid-19 pandemic had a mixed impact on the Urban Heat Island (UHI) mapping

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market. Initially, restrictions on movement, construction delays, and reduced funding for urban projects slowed adoption. However, the pandemic highlighted the importance of resilient and sustainable urban planning, driving interest in UHI mapping for climate adaptation. Increased reliance on remote sensing, GIS, and satellite data during lockdowns accelerated digital solutions. Post-pandemic, growing awareness of public health, urban sustainability, and climate risks has supported renewed investment in UHI mapping technologies.

The software & tools segment is expected to be the largest during the forecast period

The software & tools segment is expected to account for the largest market share during the forecast period due to their role in processing and visualizing thermal data. Platforms integrating multi-source inputs enable comprehensive heat mapping. AI-driven analytics are improving predictive capabilities and spatial insights. Cloud-based systems support scalability and inter-agency collaboration. Intuitive interfaces are expanding access for planners and researchers. This segment will continue to lead as cities embrace data-centric planning.

The smart city developers segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the smart city developers segment is predicted to witness the highest growth rate owing to rising demand for climate-responsive infrastructure. Thermal mapping is being used to optimize building design and land use planning. Partnerships with environmental agencies are enhancing sustainability benchmarks. Real-time data is guiding upgrades in green infrastructure and public amenities. Investment in smart urban ecosystems is accelerating adoption. This segment is poised for rapid growth as cities prioritize resilience and liveability.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share by advanced technological adoption and strong government initiatives supporting climate monitoring. Extensive use of satellite imagery, drones, and AI-based analytics helps cities identify and mitigate heat concentration zones. Collaboration between universities, federal agencies, and private companies fosters innovation and policy integration. Demand is particularly high in metropolitan regions facing rising heatwaves, where municipal planners rely on mapping to support sustainable infrastructure, reduce health risks, and improve community resilience strategies.

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Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR due to urbanization and growing environmental concerns. Governments across the region prioritize monitoring to tackle challenges such as heat stress, energy inefficiency, and urban pollution. Deployment of low-cost sensors, mobile platforms, and cloud-based tools enables broader accessibility for developing cities. Regional collaborations and smart city initiatives further enhance the adoption of mapping solutions. The market benefits from public awareness campaigns and investments aimed at balancing rapid development with sustainability and climate adaptation measures.

Key players in the market

Some of the key players in Urban Heat Island Mapping Market include Arup Group, Esri, Hexagon AB, Trimble Inc., Maxar Technologies, Planet Labs PBC, Airbus Defence and Space, Northrop Grumman, Raytheon Technologies, IBM, Microsoft, Google (Alphabet Inc.), Climate Engine, GHGSat Inc. and DroneDeploy.

Key Developments:

In April 2025, Esri partnered with NOAA and the National Integrated Heat Health Information System (NIHHIS) to support the U.S. Urban Heat Island Mapping Campaign. The collaboration enables neighborhood-level temperature mapping using ArcGIS tools, integrating environmental and demographic data to guide equitable climate resilience strategies.

In May 2024, Arup expanded its collaboration with University College London and the University of Reading to enhance the UHeat platform’s microclimate modeling capabilities. This partnership integrates academic climate models with urban planning tools, enabling more precise UHI mitigation strategies across global cities.

Components Covered:

- Data Sources
- Satellite Imagery

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- Ground-Based Sensors
- Drones & UAVs
- Software & Tools
- Geographic Information Systems (GIS)
- Artificial Intelligence & Machine Learning Models
- Climate Simulation Tools
- Services
- Mapping & Visualization
- Data Analytics & Reporting
- Consulting & Advisory

Technologies Covered:

- Remote Sensing & Thermal Imaging
- LiDAR
- Artificial Intelligence & Big Data Analytics
- Cloud Computing & IoT
- Other Technologies

End Users Covered:

- Government & Municipal Authorities
- Environmental Agencies

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- Research & Academic Institutions
- Construction & Infrastructure Companies
- Urban Planners & Architects
- Smart City Developers
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan

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China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants

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- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Contents

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5 GLOBAL URBAN HEAT ISLAND MAPPING MARKET, BY COMPONENT

6 GLOBAL URBAN HEAT ISLAND MAPPING MARKET, BY TECHNOLOGY

7 GLOBAL URBAN HEAT ISLAND MAPPING MARKET, BY END USER

8 GLOBAL URBAN HEAT ISLAND MAPPING MARKET, BY GEOGRAPHY

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9 KEY DEVELOPMENTS

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10 COMPANY PROFILING

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List Of Tables

LIST OF TABLES

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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