

Making a Smart & Resilient City: Yongin Special City's Practices for Climate-Adaptive DRR

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1. General Overview of Yongin Special City

- 1-1. Climate Change Trends and Extreme Weather Events
- 1-2. Population, GRDP and Disasters Budget Overview

2 . Smart DRR Practices and Governance in Yongin Special City

- 2-1. [Pre-Disaster Phase] Establishing the Nation's First 'School-Customized Snow Removal Map'
- 2-2. [During-Disaster Phase] Operating IoT-Enabled 'Smart Snow Monitoring and Control System'
- 2-3. [Post-Disaster & Governance] Collaborative DRR Ecosystem and Global Leadership

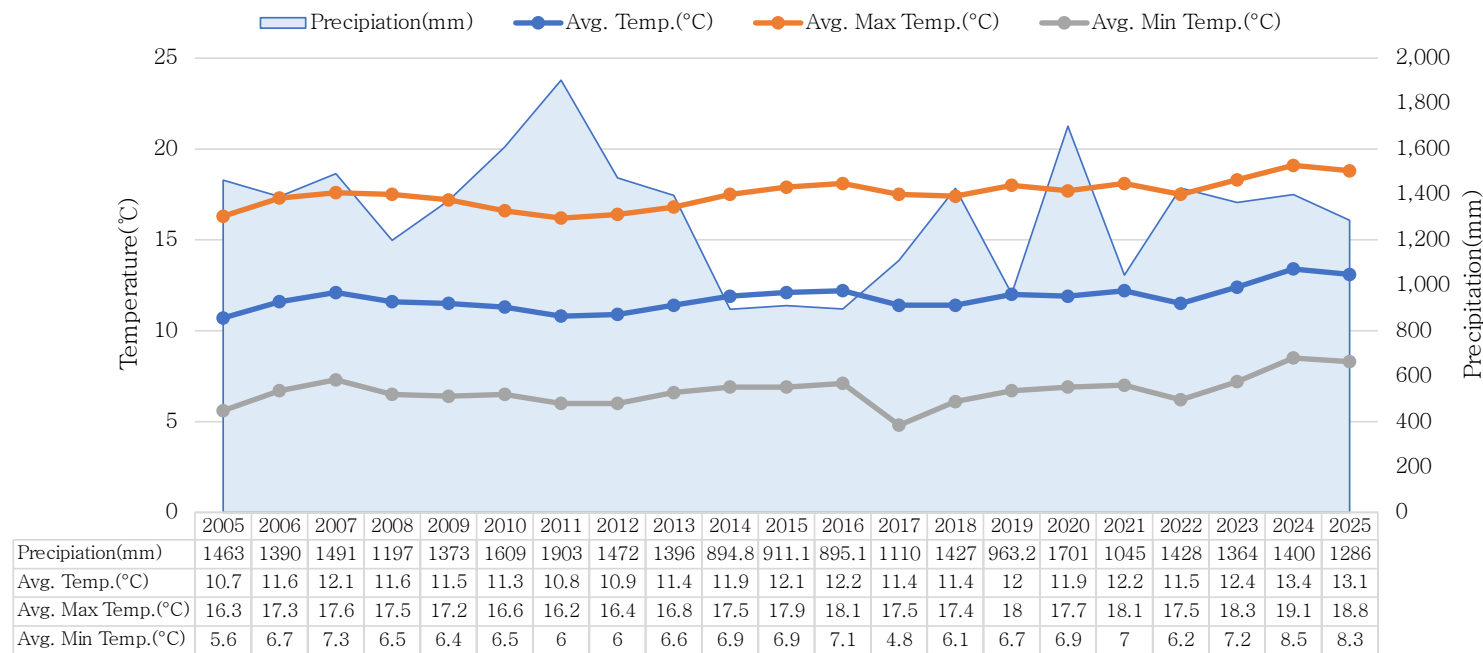
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1-1. Climate Change Trends and Extreme Weather Events

The annual average temperature rose **by 1.2°C** over the past decade (2014–2025).
 The risk of disasters has also increased due to the **rise in heatwave days**.

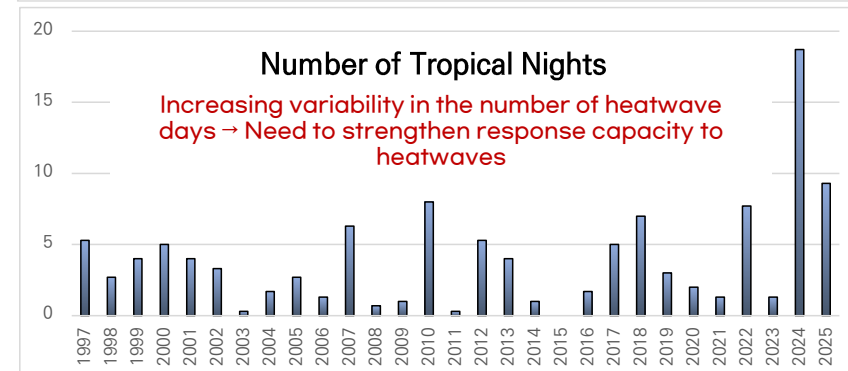
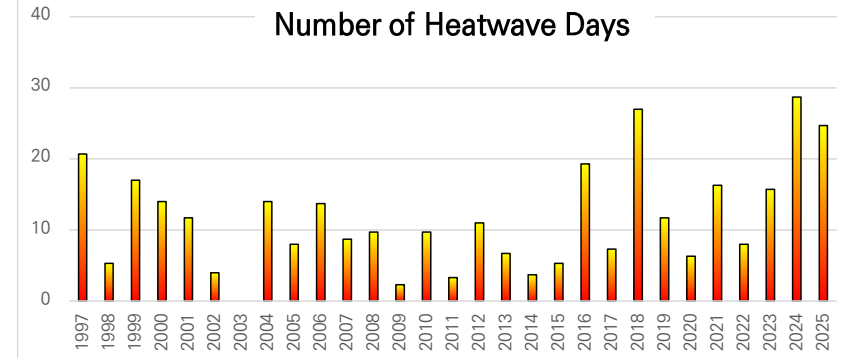
Annual Precipitation and Temperature Trends



Source: Korea Meteorological Administration (KMA), Weather Data Open Portal, Automatic Weather Stations (AWS)

Note: Based on analysis of hourly data from three weather stations located in Yongin City — Yongin (549), Yongin-Idong (575), and Baegam (576).

Heatwave and Tropical Night Days



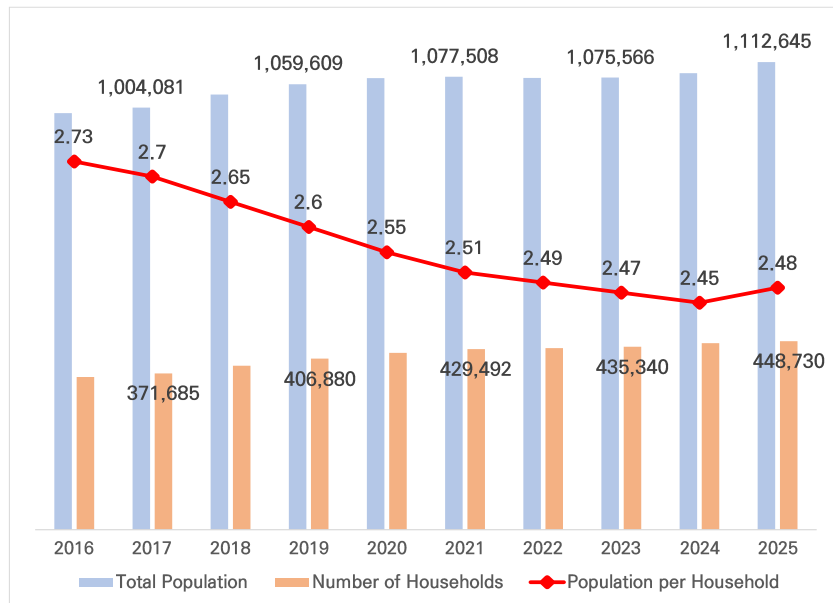
Source: Korea Meteorological Administration (KMA) Weather Data Open Portal, Automatic Weather Stations (AWS)

1-2. Population, GRDP and Disasters Budget Overview

Population grew by **12.3%** over the past decade (2016–2025),
 GRDP increased by **27.6%** over the period 2013–2022.

Annual Population and Households Status

Units : Person, Househods, Persons per Households

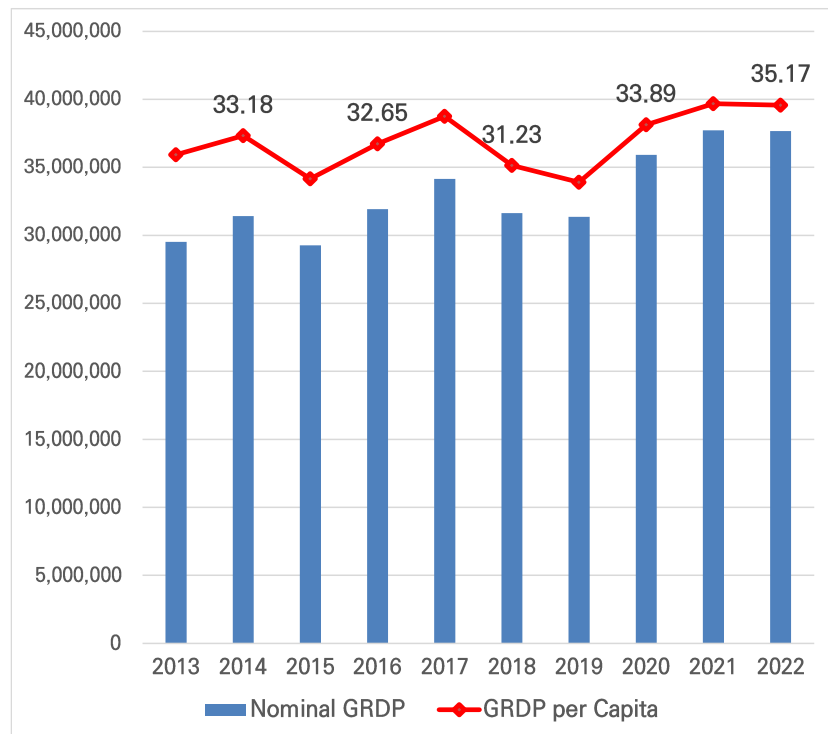


Source: Resident Registration Population Statistics, Ministry of the Interior and Safety

▶▶ As of July 2026, Yongin Special City's population reached **1,111,615** and the number of households **450,846**, showing a steady upward trend.

Annual Gross Regional Domestic Product (GRDP)

Units : Million KRW, Million KRW per Capita



Source: Gyeonggi Statistics, Estimated GRDP by City/County in Gyeonggi Province

Disasters and Safety Budget

Units : KRW 1,000

	2023	2024	2025	2026
Total Budget of Disasters-Safety	132,012,893	158,988,636	187,473,702	200,765,144
↳ Natural Disasters	17,673,343	20,684,794	25,373,902	34,823,143
↳ Social Disasters and Safety Accidents	108,924,628	129,788,936	145,583,182	150,393,055
↳ Others	5,414,922	8,514,906	16,516,618	15,548,946
Total Budget of Yongin City	2,933,616,909	2,955,702,147	3,052,890,771	3,517,443,258

▶▶ The share of Yongin City's **disaster and safety budget** has steadily increased from 4.11% in 2023 to 5.71% in 2026.

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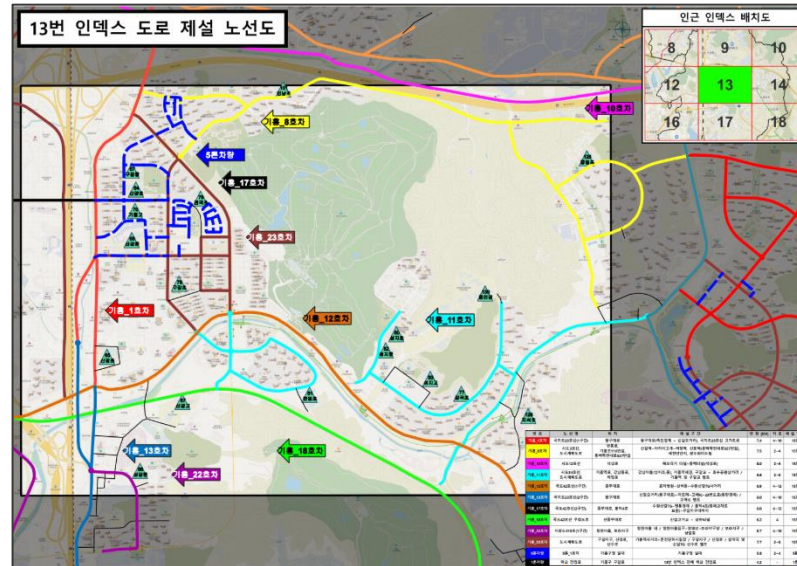
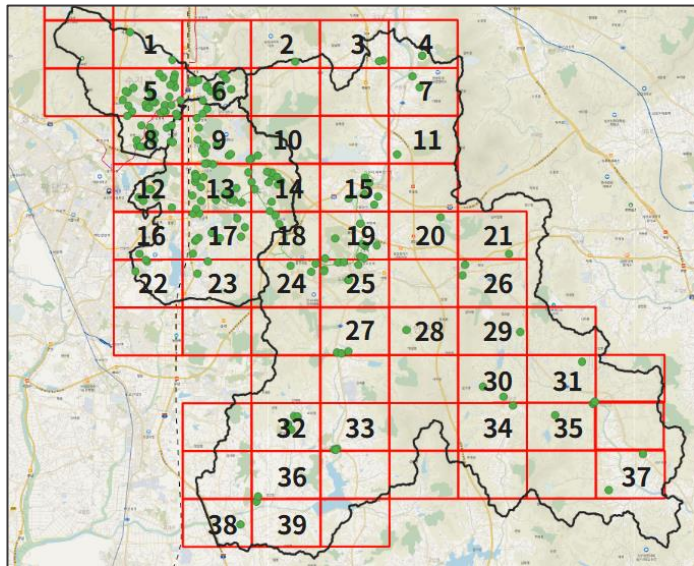
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2 Smart DRR Practices and Governance in Yongin Special City

2-1. [Pre-Disaster Phase] Establishing the Nation's First 'School-Customized Snow Removal Map'

Shifting from vehicle-centric main roads to **pedestrian-centric school zones** through precise spatial database establishment.

School-Customized Snow Removal Map



- Complete Spatial Mapping of 195 Schools via 39 Index Grids
 - Established a citywide GIS grid dividing Yongin into **39 sectors** to systematically survey and manage **all 195 school** commuting zones
- Micro-Level Facility Integration & Customized Safety Profiles
 - Documented detailed **①sidewalk slopes, ②on-site photos, and ③snow-melting assets** (heating wires, brine sprayers) to assign standardized snow removal priorities

2 Smart DRR Practices and Governance in Yongin Special City

2-2. [During-Disaster Phase] Operating IoT-Enabled 'Smart Snow Monitoring and Control System'

Maximizing real-time situational awareness and operational efficiency
via **IoT-enabled Smart Snow Control System**.

Smart Snow Monitoring and Control System



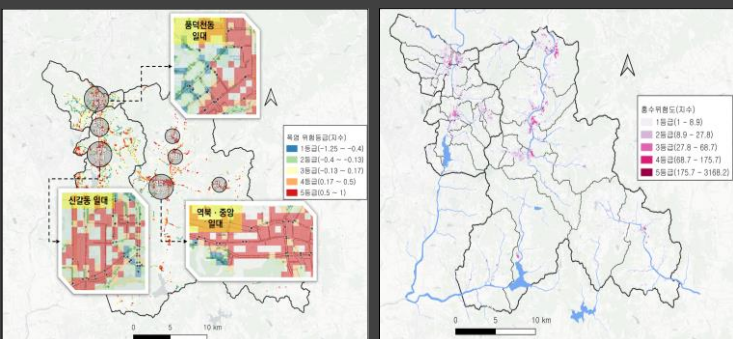
- Real-Time Tracking & Live Visual Monitoring
 - Synchronizes GPS vehicle telemetry with live in-vehicle feeds and CCTVs to track snow removal progress and road conditions simultaneously.
- Dynamic Central Command & Blind-Spot Resolution
 - Empowers the situation room to immediately identify unplowed routes and dynamically redirect equipment to high-priority school zones.

2 Smart DRR Practices and Governance in Yongin Special City

2-3. [Post-Disaster & Governance] Collaborative DRR Ecosystem and Global Leadership

Advancing urban resilience via scientific research, global partnerships, and multi-agency leadership.

① Science-Policy Research



Yongin Research Institute Collaboration

Analyzing past disaster records (heatwave, flood inundation history) to build empirical hazard maps.

Translating post-event damage assessments into structural prevention policies and safety infrastructure.

② Global DRR Partnership

United Nations Office for Disaster Risk Reduction (UNDRR) Activities

Making Cities Resilient 2030 (MCR2030)
Officially joined the global campaign (May 2024)



③ Multi-Agency Governance

Safety Culture Salon Program

Bimonthly meetings with related agencies
to discuss measures for strengthening citizen safety



Key Achievements

-  **Presidential Commendation** for three consecutive years (2022–2024) and ten consecutive years as an **Excellent Disaster Management City**.
-  **No. 1 City in Gyeonggi Province** for the 2024–2025 Winter Disaster Evaluation (Cold Waves), awarded **the Governor's Commendation**.

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3 Future Vision for Inter-City Knowledge Sharing

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Sharing Proven DRR Know-How and Fostering Urban Resilience with Peer Cities.

Smart & Preemptive DRR Sharing

■ Smart Data Integration System

- Sharing operational practices of GIS-based real-time meteorological, hydrological, and hazard mapping systems.

■ Policy Manuals & Best Practices

- Disseminating standardized DRR framework manuals, hazard mapping methodologies, and case study reports.

Experiential Safety & School Safety Model

■ Experiential Safety Programs

- Transferring modular safety education models (Bicycle Safety License, Climate Change Experience Center).

■ School-Customized Snow Removal Map

- Sharing the nation's first GIS-based school zone snow removal mapping model and winter response protocols.

Citizen & Multi-Agency Governance

■ 'Safety Culture Salon' Platform

- Disseminating the executive consultative model to eliminate administrative silos across institutions.

■ Citizen Volunteer Corps

- Offering operational guidelines, civic safety curricula, and public campaign models for community resilience.

Our Commitment

Yongin Special City is fully prepared to systematically manage disaster risks, build a climate-ready community, and actively share our innovative policies and know-how with peer cities.

Thank you for your attention.