Japanese Winter
~ Festival ~

L'hiver au Japon
– Fêtes –

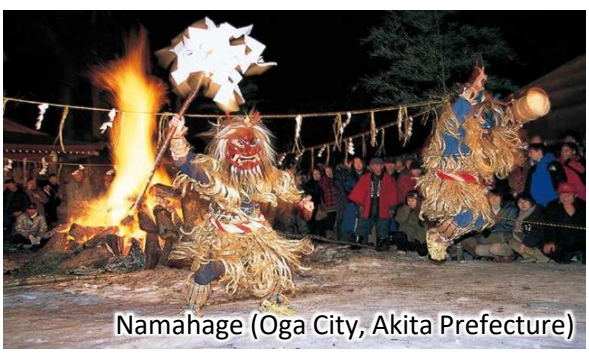

Yokote Snow Festival “Kamakura(snow hut)” (Yokote City, Akita Prefecture)


Hirosaki Castle Snow Lantern Festival
(Hirosaki City, Aomori Prefecture)


Aizu Hand-Painted Candle Festival
(Aizuwakamatsu City, Fukushima Prefecture)

Sapporo Snow Festival (Sapporo City, Hokkaido)


Sounkyo Ice Waterfall Festival
(Kamikawa Town, Hokkaido)


Namahage (Oga City, Akita Prefecture)

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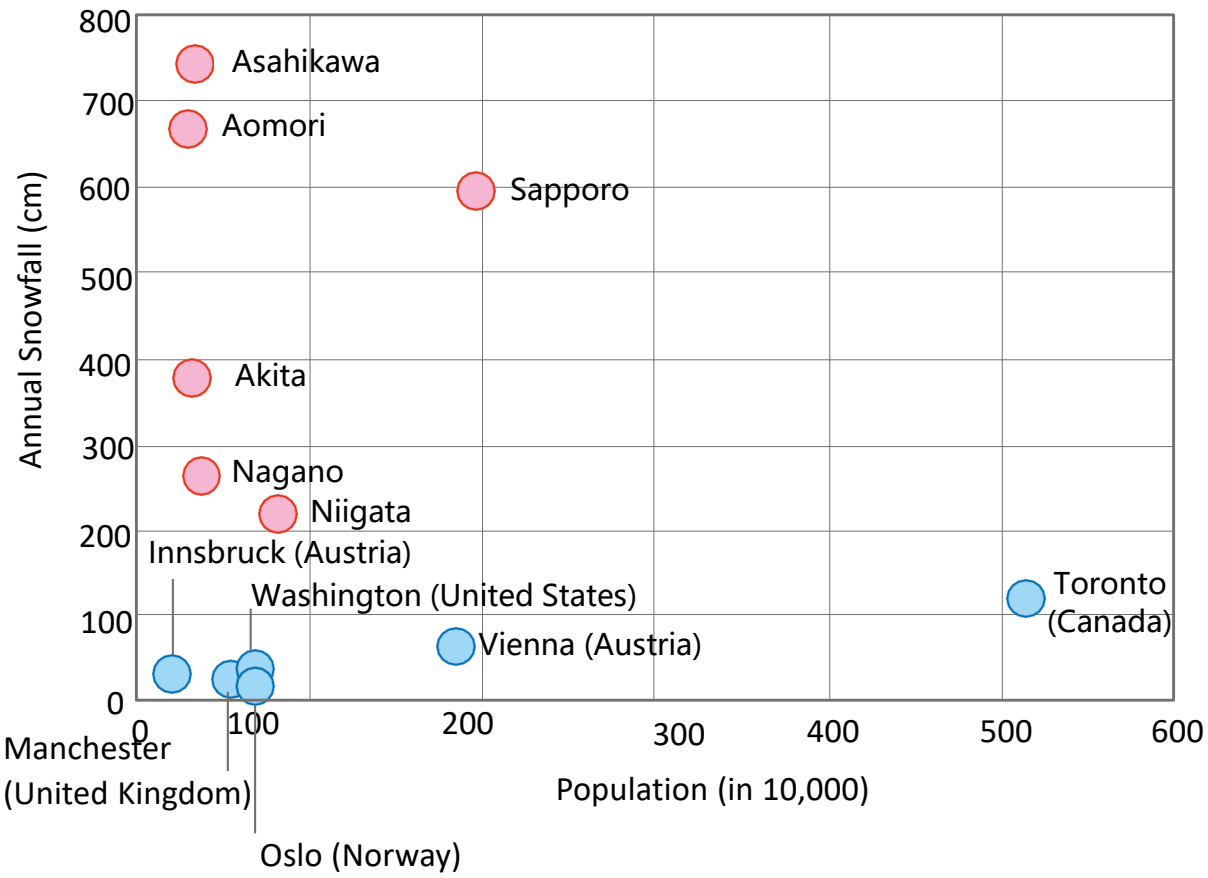
Characteristics of Winter Transportation in Japan

Les caractéristiques de la circulation routière hivernale au Japon

Winter road maintenance is the lifeline for sustaining daily life and logistics.

Annual Snowfall in Cities Around the World



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Large-scale vehicle stagnation(Stuck)

Blocage massif de véhicules
(véhicules bloqués)

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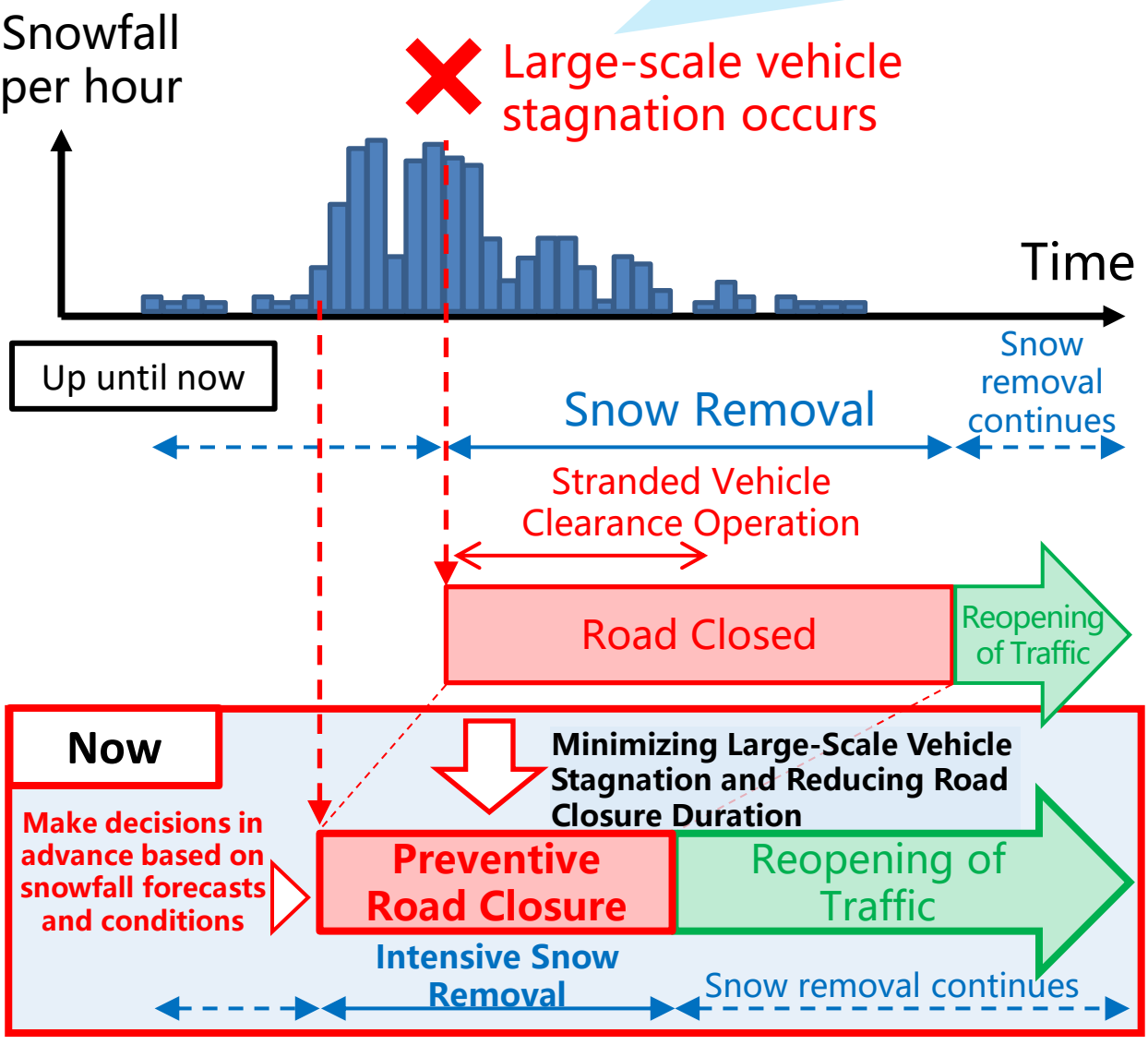
A Change in Approaches
Preventative Road Closures Without Hesitation

Changement d'approche
Mise en œuvre proactive de fermetures préventives de la circulation

Hesitation to suspend traffic during short-term heavy snowfall
Leads to large-scale traffic congestion
⇒ Significant impact on daily life and logistics



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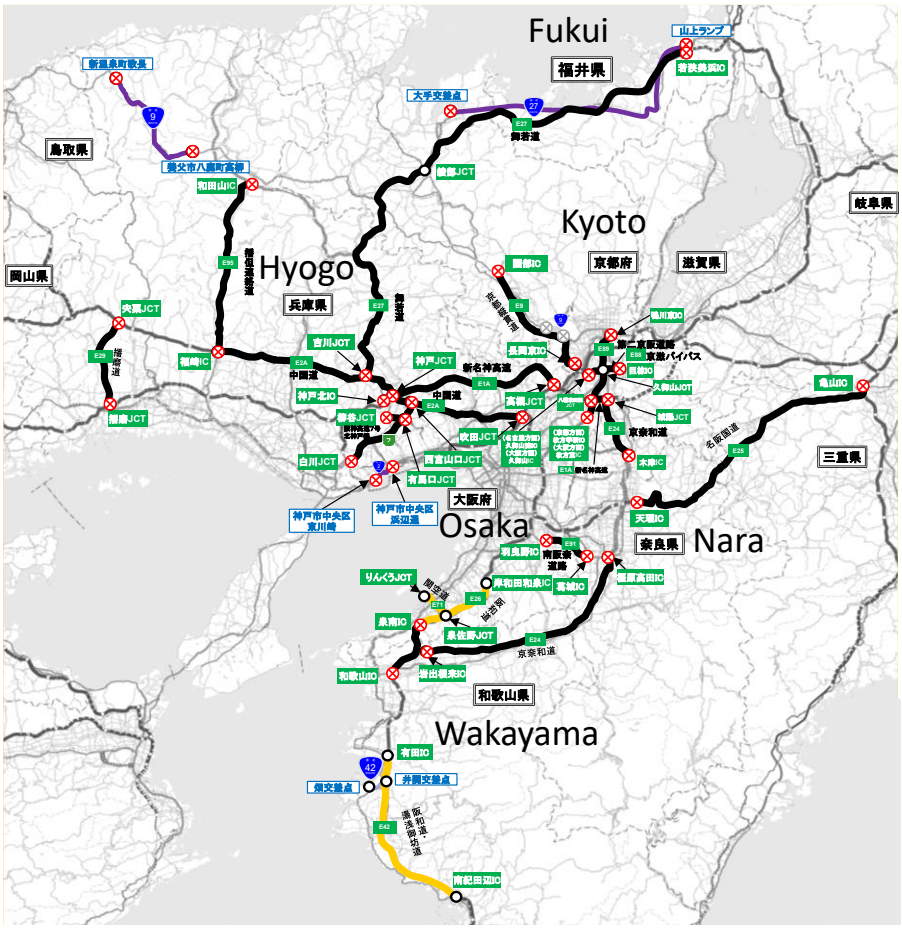
Wide-Area Preventive Road Closures – Initiatives in Metropolitan Areas –

Fermetures préventives de la circulation
sur un périmètre étendu
– Dispositif appliqué aux zones métropolitaines –

Wide-area Preventive Road Closures

During periods of extensive heavy snowfall across metropolitan areas, we implement wide-area preventive closures of the main road network.



- Preventive road closures enable concentrated snow removal
  ⇒ Minimizing large-scale vehicle congestion and reducing closure times

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Winter Road Operation and Maintenance

Opérations d'entretien et de gestion des routes en hiver

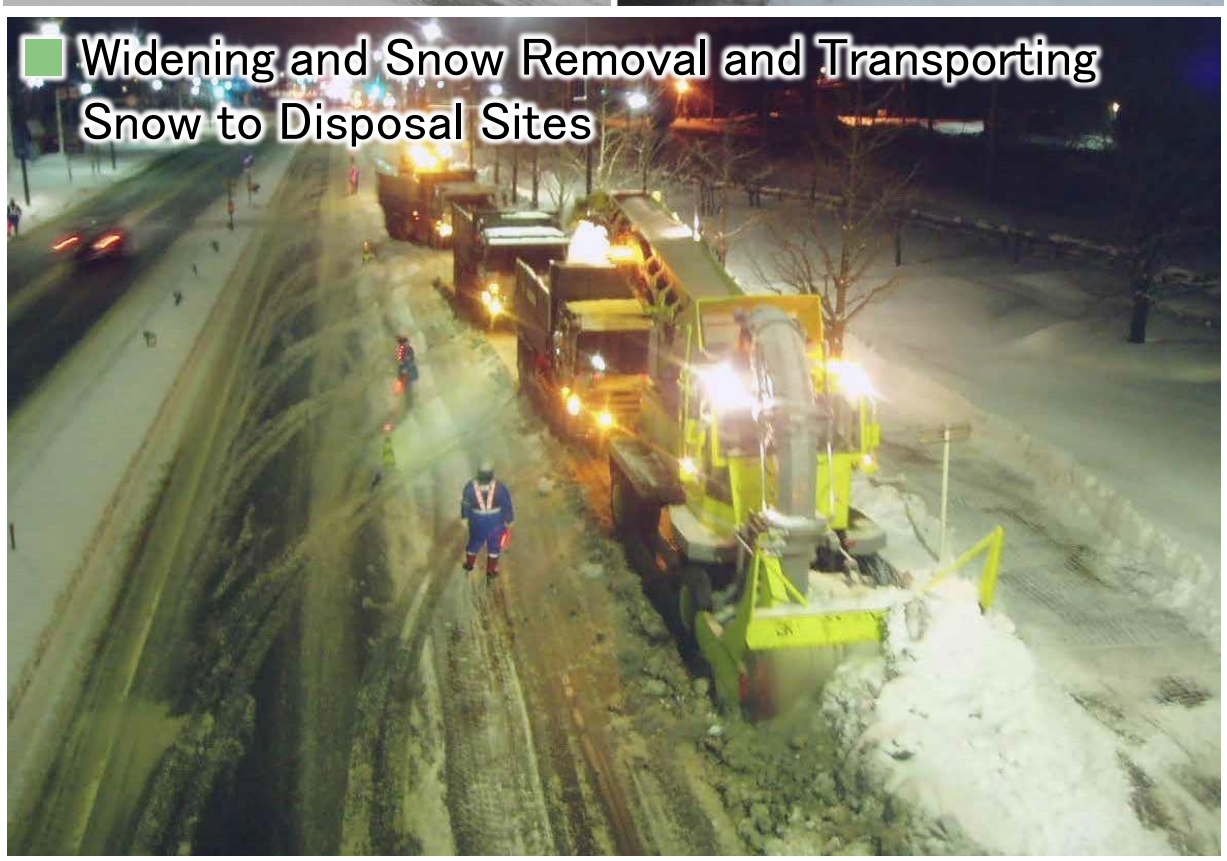
New Snow Removal by Echelon Formation

National Route 4
(Aomori City, Aomori Prefecture)

Anti-Icing Agent Application

Sidewalk Snow Removal

Widening and Snow Removal and Transporting Snow to Disposal Sites



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Multifunctionality of Snow Removal Machinery

Polyvalence des engins de déneigement

One machine, two roles! Introducing a multifunctional machine

Snowplow Truck

Snow Removal from Roadways

Deicing Agent Spreader Vechile

Deicing agent spraying

Rotary Snowplow

Widening Snow Removal

Snowplow

Snow Removal from Roadways

Compact Snow Plower

Sidewalk Snow Removal

Roadside Mower

Roadside Weeding

Advantage

Purchase costs alone reduced by over 20%

Other benefits include :

- Reduced vehicle storage space
- Lower vehicle maintenance costs

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Development of New Snow Removal Machinery - Automation of Working Equipment-

Développement de nouveaux engins de déneigement – Automatisation des équipements –

Automate operations to reduce labor and enhance safety

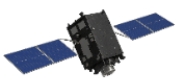
<Background>

- Aging operators, shortage of personnel
- Decline in skilled operators (transfer of skilled operators' expertise)

Automated Machinery Utilizing the Quasi-Zenith Satellite "Michibiki"

Snowplow Truck

Rotary Snowplow



Quasi-Zenith Satellite

Snowplow Grader

Compact Snow Plower (Sidewalk Snow Removal)

Automation Concept for Rotary Snow Plows

*Red text: Changes made by automation

Experienced Operator + Assistant	Operator + Automated Technology
	
Two-person crew	One-person crew
- Vehicle operation - Equipment operation - Awareness of own vehicle position - Safety checks (other vehicles, forward obstacles)	- Vehicle operation - Automatic Control of Equipment - Tracking Your Vehicle's Location Using Satellite Information - Safety verification using perimeter detection technology

Video

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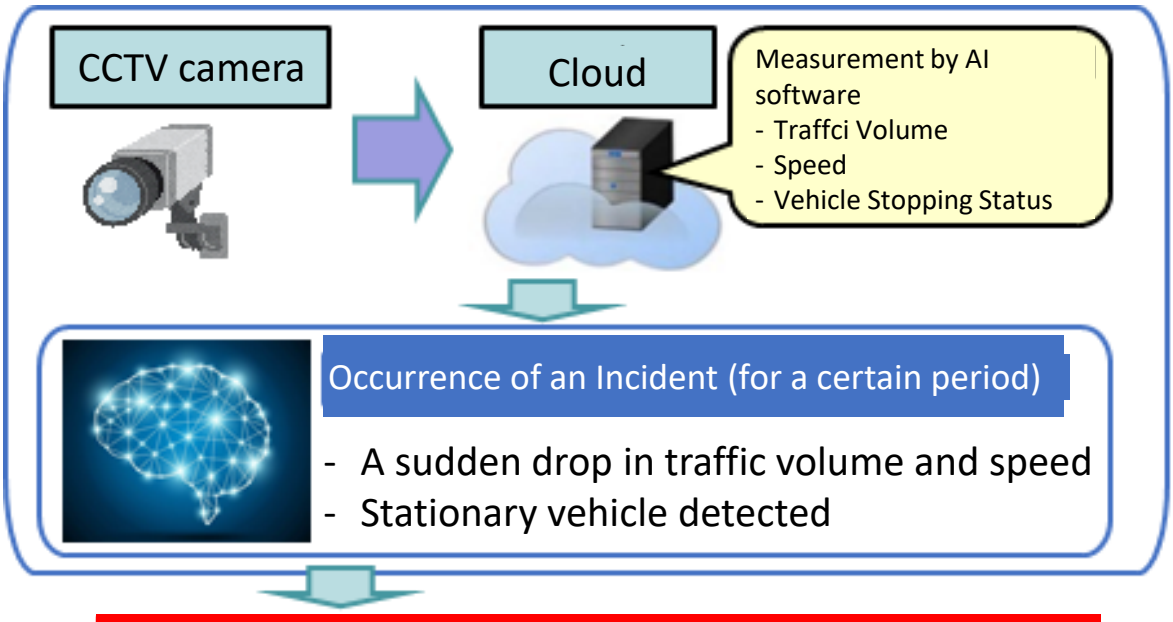
Smart Winter Management Using ICT and AI

Gestion hivernale intelligente grâce aux TIC et à l'IA

【AI-Based Automatic Detection of Traffic Disruptions】



Automatic Traffic Incident Detection

Promptly shared among road administrators

On-site Response: Early Removal of Stranded Vehicles

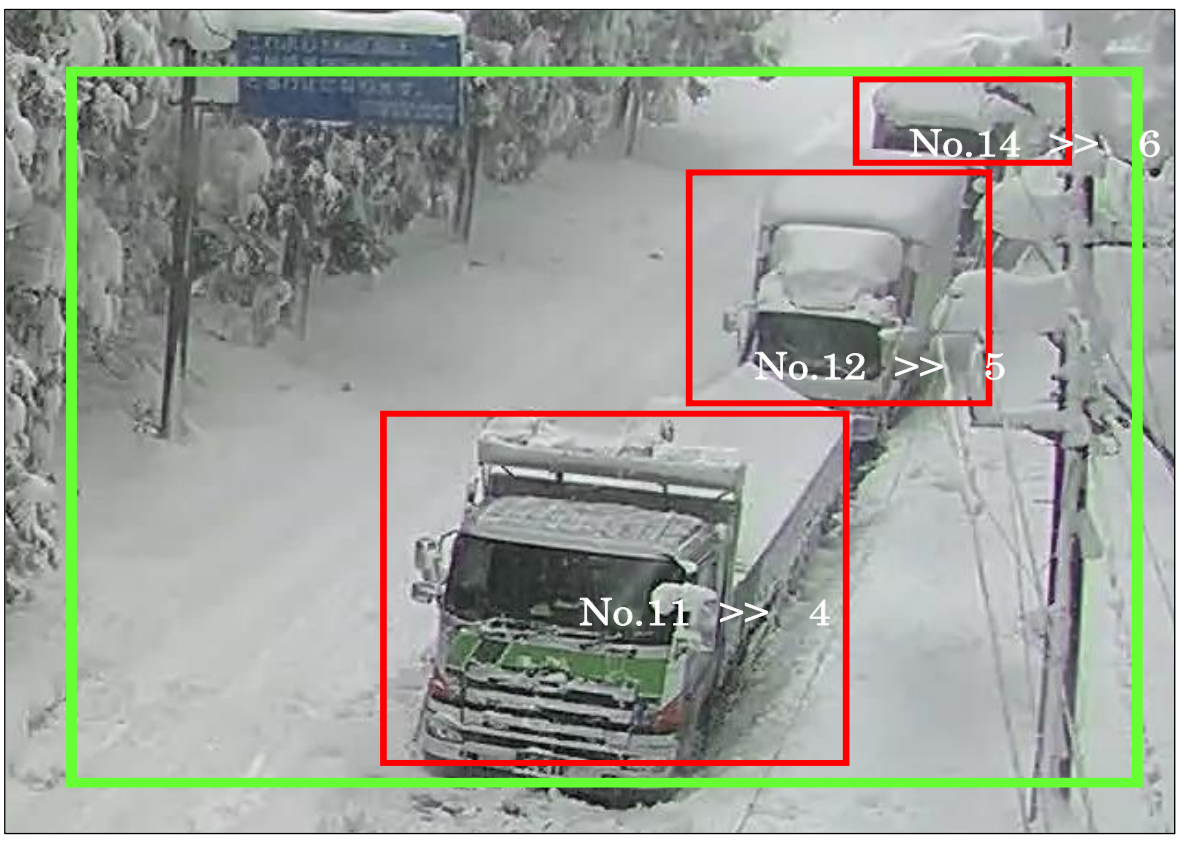


Image of AI-based automatic detection (occurrence of stranded vehicles)

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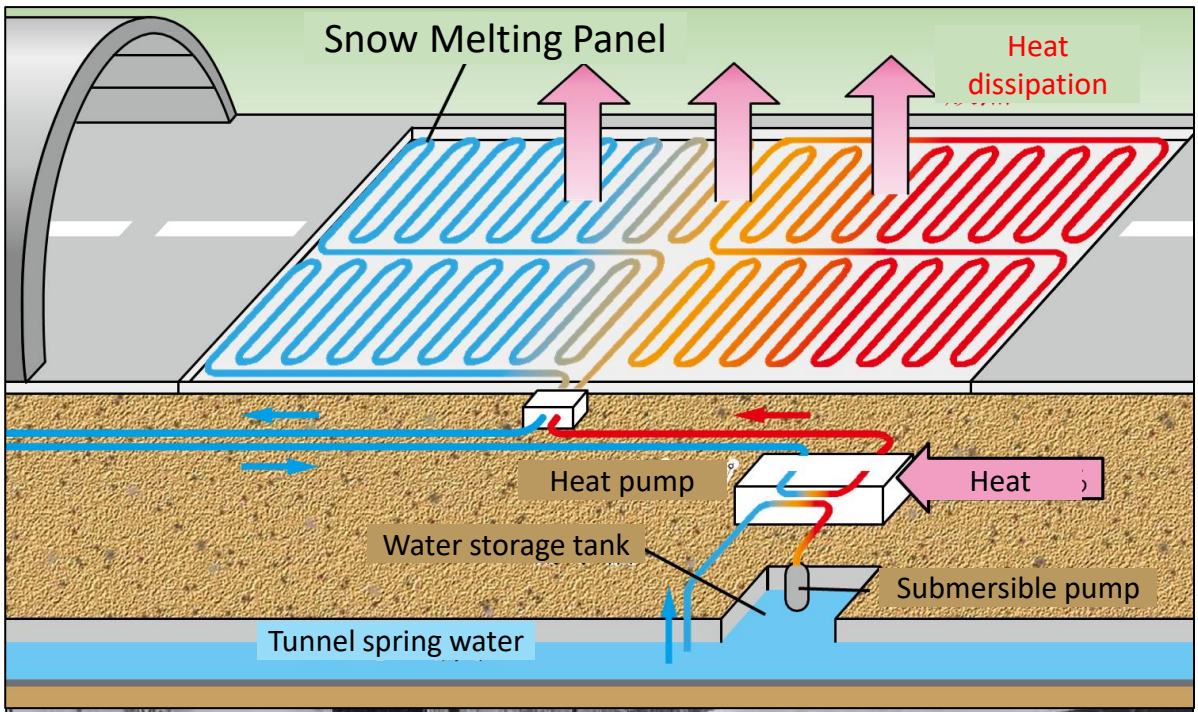
Snow-Melting Road Technology

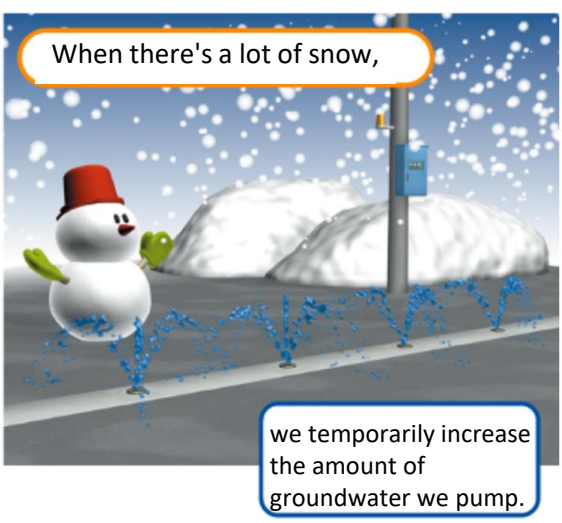
Technologies des routes à dispositif de fonte de neige
(Snow-Melting Roads)

Road heating at the tunnel entrance



National Route 13 Shin-Shinobisaka Tunnel Murokawa Side Portal
(Murokawa Town, Yamagata Prefecture)

Snowmelt Pipes and Groundwater



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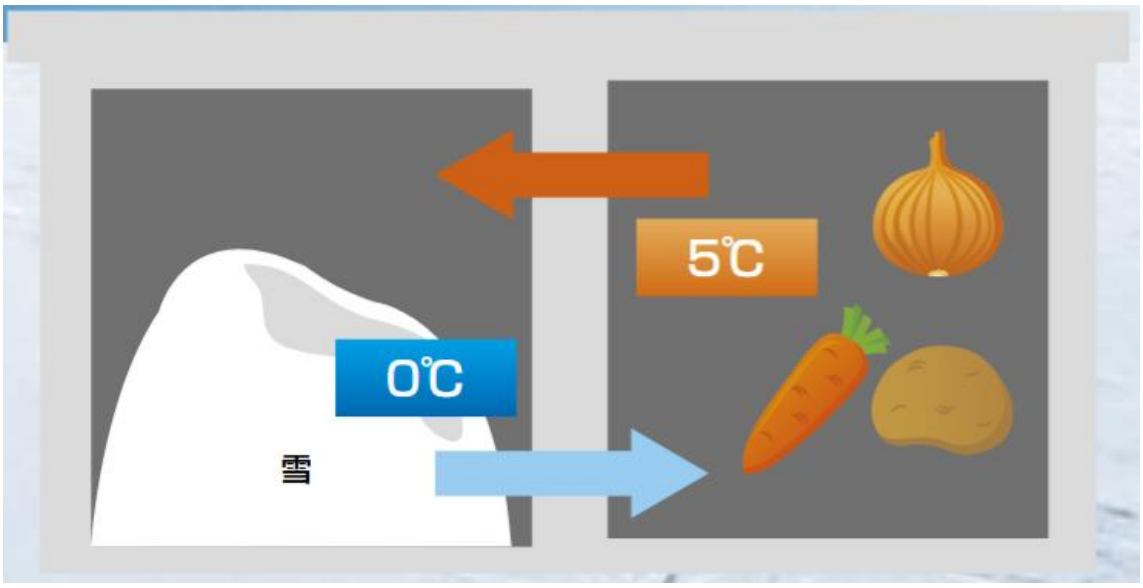
Perceiving Snow as a “Resource”: A Perspective from Japanese Culture

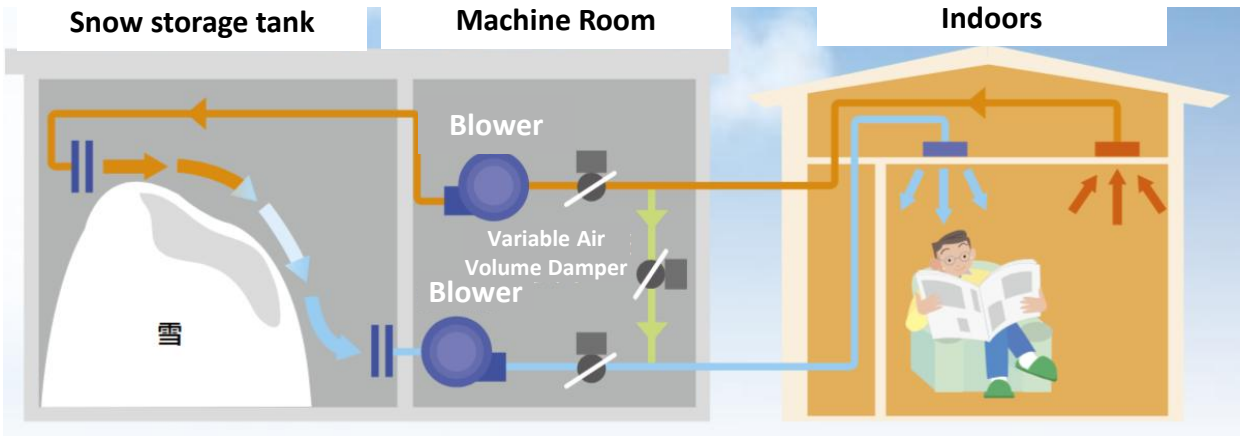
La neige comme « ressource » dans la culture japonaise

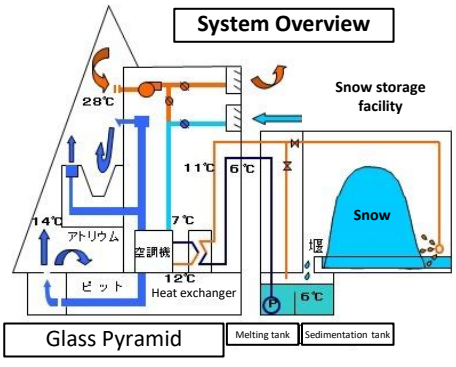
Snow-Cooled Storage (Snow Room) <Natural Convection Method>



Utilizing snow to preserve food and beverages for extended periods at low temperatures and high humidity

Snow Cooling System <Full Air Circulation System>





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Working Together with the Community "Tripartite Snow Removal Collaboration"

Déneigement collaboratif tripartite mené avec les collectivités locales

Issues
Challenges Vary by Region
Snow Removal Becomes Difficult Due to Aging Population

Role
Regarding snowmelt methods, choose and consider locally.

Citizens and Neighborhood Associations

Collaborative Snow Removal

Snow Removal Contractor

- **Decline in snow removal contractors and operators**
- **Deterioration in the quality of snow removal contractors**

Establishing a sustainable system for the future.

City

- **Increase in management infrastructure (roads)**
- **Increase in snow removal expenses**

Establishing Support Programs for Neighborhood Collaboration

Snow Removal Activities at Asumino Neighborhood Association, Takizawa City, Iwate Prefecture

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Rapid Recovery
from the 2024 Noto Earthquake

Remise en état rapide
après le séisme de Noto en 2024

Jan 1, 2024

May 2024

Turning
Uplifted Coastline
into a New Road

Dec 2024

Moving Forward to Permanent Reconstruction

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Strengthening Network Resilience
Redundant Networks Save Lives

Renforcement de la résilience des réseaux routiers
Des réseaux redondants sauvent des vies

Current Challenge:
(Provisional) 2-Lane Network

4-lane expansion and strengthening dual road networks

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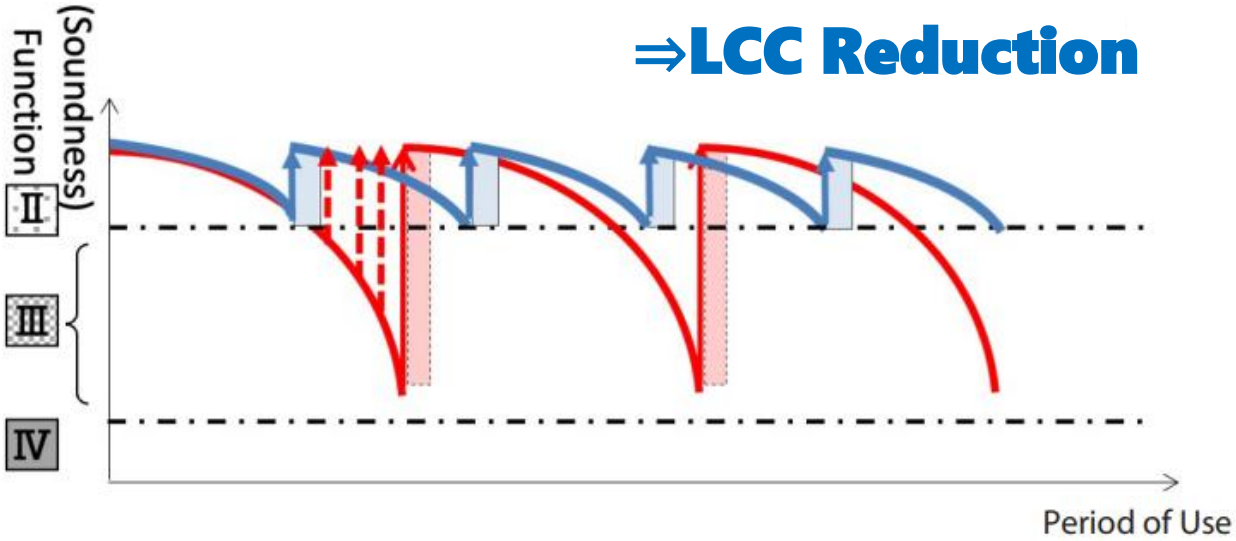
Strategic Preventive Maintenance
From Reactive to Preventive

Stratégie de maintenance préventive
Passer d'une approche réactive à une approche préventive

Preventive Maintenance
: Repairs performed while damage is minor

Occurrence of cracking

Attachment of carbon fiber sheets



⇒LCC Reduction

Reactive Maintenance
: Large-scale repairs performed after damage becomes severe

Deck slab collapse

Replacement with precast deck slab

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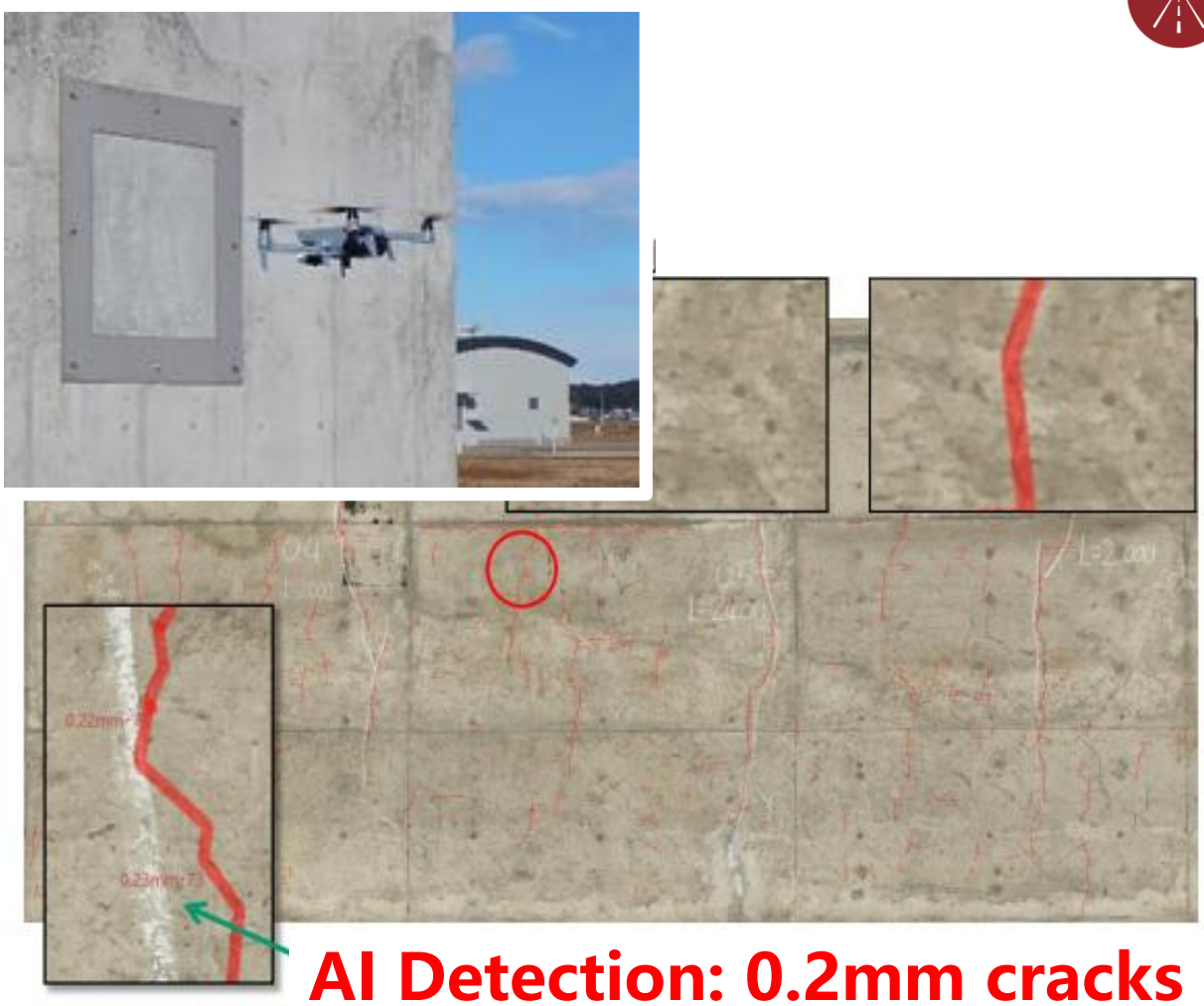
Road DX & Innovation
Smart Maintenance with AI & Drones

Transformation numérique et innovation routière
Maintenance intelligente grâce à l'IA et aux drones



AI Detection: 0.2mm cracks

Mobile High-Speed 3D Tunnel Inspection System

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Decarbonization in the Road Sector

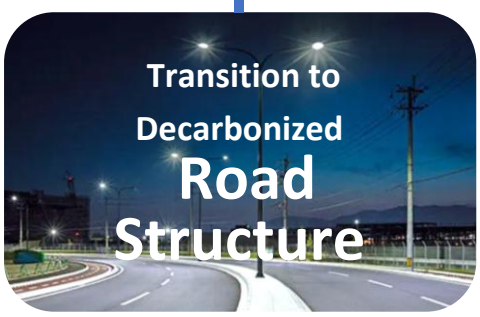
Décarbonisation du secteur routier

New Framework under the Revised Road Act (2025)

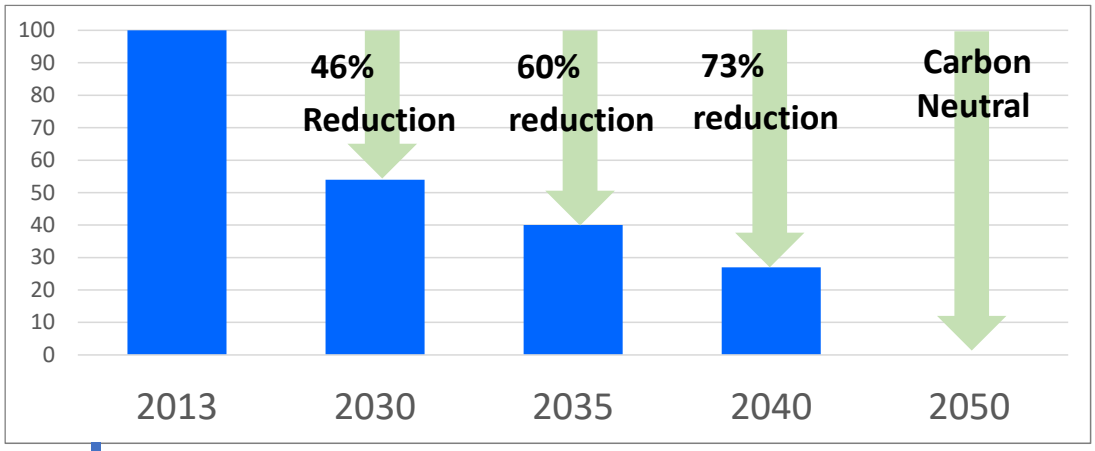
Road Decarbonization
Basic Policy
[National]

Road Decarbonization
Promotion Plan
[National Government, Expressway Companies, Local Governments]

Promoting the Utilization of Decarbonization Technologies



Overall Reduction Targets for Roads



Management — Same quantitative targets as the entire road sector — **Immediate Priority**

Maintenance Usage — Quanatitative Targets to be set in the future

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Decarbonizing the entire lifecycle of roads

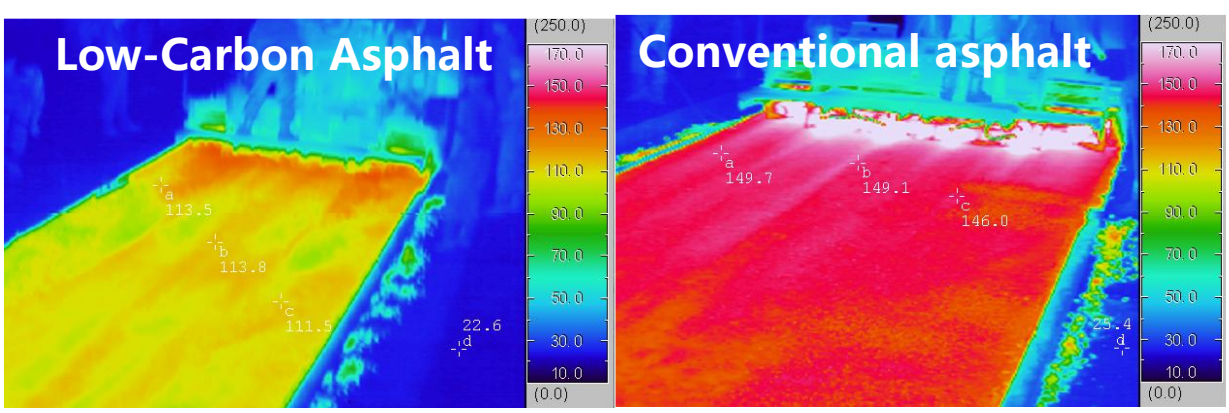
Décarbonisation

de l'ensemble du cycle de vie des routes

We actively introduce **new technologies** throughout the entire lifecycle of roads to reduce **CO_2 emissions**.

Switching to LED Lighting

Introduction of Sensor Lighting



Introduction of low-carbon asphalt

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Decarbonization in the Road Sector

Décarbonisation du secteur routier

We promote the initiatives for power generation, transmission, charging, and storage in road space

Promoting the introduction of **perovskite solar cells** in road space

Demonstration of **In-Motion (Dynamic) Wireless Charging**

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Low-Carbon Mobility & Traffic Optimization

Mobilité bas carbone et optimisation du trafic

To encourage low-carbon travel, we promote the transition to low-carbon transportation and logistics systems through a dual approach of infrastructure and non-infrastructure-based measures.

Bike-share stations near railway stations

Conventional heavy-duty truck

Approximately 12 meters

Double-trailer truck

Capable of transporting the load of two trucks in one vehicle

Relaxed vehicle length standards
for Oversized Special Vehicle permits (up to 25m maximum)

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GREEN × EXPO 2027

19 March – 26 September 2027

Du 19 mars au 26 septembre 2027

Yokohama, Kanagawa, Japan

Yokohama, Kanagawa, Japon

<Theme>

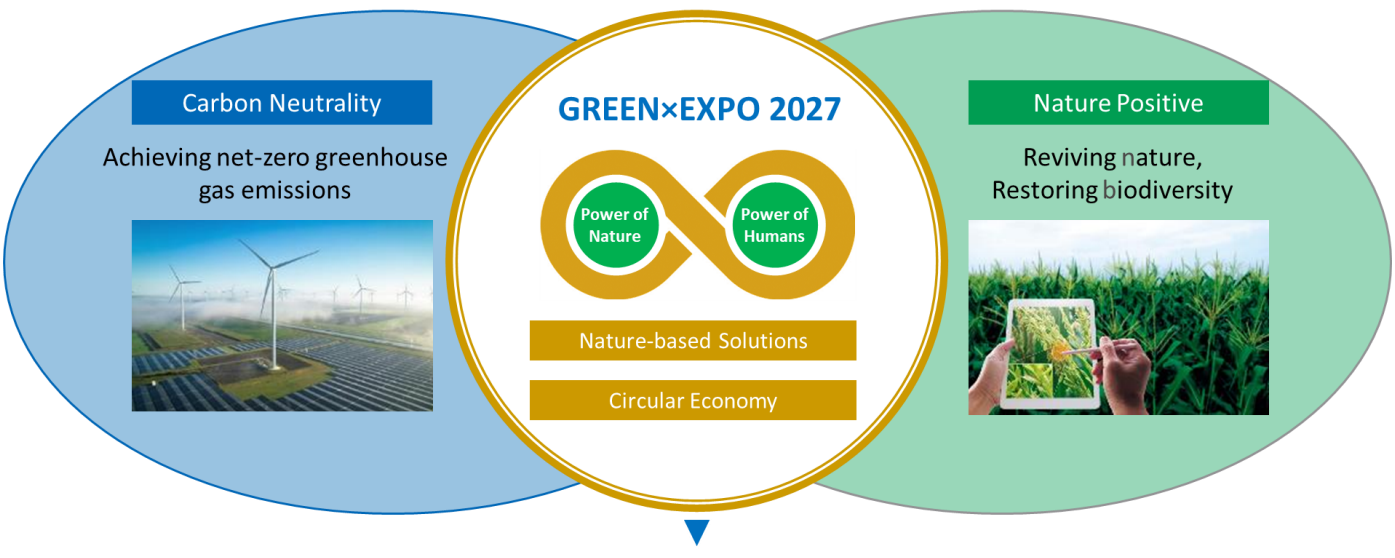
Scenery of the Future for Happiness

Background

Planetary boundaries

Climate change, loss of biodiversity, air pollution, and other concerns

GREEN×EXPO 2027 is an opportunity for transforming mindsets and actions for driving solutions of global challenges through hands-on experiences and practical action within planetary boundaries.



To a world where it becomes natural for everyone to have awareness of coexisting with the Earth's environment, nature and plants, and to take action together.

EXPO 2027 YOKOHAMA JAPAN

Official Mascot

Tunku Tunku