



DUBLIN & SEOUL'S JOINT PUBLICATION

ON DIGITAL TRANSITION IN SUSTAINABLE MOBILITY



INTERNATIONAL URBAN AND REGIONAL COOPERATION (IURC)

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INTRODUCTION

The EU-funded “International Urban and Regional Cooperation – IURC – Asia and Australasia (2021-2023)” project has been implemented by the Directorate General Foreign Policy Instruments (FPI) of the European Commission, in coordination with the Directorate General for Regional and Urban Policy (REGIO) of the European Commission. The IURC projects have promoted decentralised city-to-city cooperation between cities in the European Union (EU) and in non-EU countries.

As the second phase of the International Urban Cooperation programme (IUC) (2016-2020), IURC aims to lead and develop a form of decentralised international urban and regional cooperation in the fields of sustainable urban development and innovation, in key partner countries and regions in line with the external dimension of “Europe 2020.”

The project also aims to contribute to the objectives of the New Urban Agenda, the Agenda 2030 (SDGs), the Urban Agenda for the EU and the political objectives of the European Cohesion Policy through city-to-city diplomacy and collaborative regional efforts to overcome common challenges.

City Introduction Dublin City Council

Dublin is the capital city of the Republic of Ireland and is located on the east coast. Its rich history and culture showcase its resilience over the years; it can be considered a city of opportunity and possibility. Dublin aims to become a sustainable city that is environmentally and socially equitable.

Dublin City (117 km²) is home to 592,713 people, Dublin City Council (DCC) is the local authority responsible for ensuring that the city and its citizens thrive. Our vision is for Dublin to be a dynamic, sustainable city, that is future-ready, built on thriving, inclusive neighbourhoods and communities, a strong economy, a vibrant cultural life, and compact, connected growth as stated in our DCC’s Corporate Plan (2020-2024). DCC is a signatory of EU Covenant of Mayors for Climate and Energy. This commits our National Climate Objective commits us to reducing our emissions by 51% by 2030, and building resilience to climate change through integrated and collaborative responses with people at the centre. Further, we are striving for neutrality before 2050 as per Dublin City’s participation in the EU Mission for 100 Climate Neutral and Smart Cities (Net Zero Cities).

City Introduction Seoul Metropolitan Government

Seoul Metropolitan Government is the capital city of the Republic of Korea. As located at the centre of the Korean Peninsula, the city’s area is about 12,685 km². The Han River flows horizontally across Seoul, dividing the city into two sections lying north and south of the river.

The city developed in digitalization and smart cities, and technology is woven into citizens’ daily lives and moves towards a green and sustainable city. Since the city is a highly dense city with a population of more than 9 million, the city government has made its best effort to enhance and expand public transportation such as buses, subways, taxis, and active mobility. The city government uses daily traffic data analysis to inform and improve its policies, ensuring better services for its citizens

The city is aimed to improve and increase the modes of transportation, shared public transportation, walking & cycling implementations, and even micro-mobility. And willing to continue expanding the green spaces in the city, which crucially impact the citizen overall.



Cooperation between Dublin and Seoul



Seoul Metropolitan Government has a well-developed Transport Operations and Information System (TOPIS) that DCC intends to understand in greater detail with the view to improving traffic management in Dublin City.

The significance of data utilization in society is growing, and gathering transportation data is a powerful tool for urban planning. By utilizing data provided by citizens, our respective cities can not only develop public transportation but also promote active travel. This roadmap is essential for fulfilling the Urban Agenda for the EU, specifically in the areas of Urban Mobility and Digital Transition.

By improving our capacity to use data to improve movement through our cities we are enabling people to make active travel and public transport their first choice. This project will have benefits well beyond our respective cities, as from the available research on data for pedestrian and cyclist monitoring (Lee and Sener, 2020; Ermagun, et al, 2018) understanding how people move through the city is still a challenge that needs to be addressed to achieve and to realise the known benefits of active travel from improved health and well-being to be better air quality and greener cities.

This project will also explore how different data sets, for example air quality may be used to understand the impacts of interventions aimed at improving walking and cycling. Exploring and combining data sets will allow us to understand what makes an enjoyable walking and cycling route, which should inform design of future projects.

CHALLENGES



Dublin

Dublin City Council is the local authority responsible for Dublin City, the capital city of Ireland. Like all cities, DCC faces challenges in driving the sustainable development of the City. DCC is committed to strong civic leadership and the delivery of effective services that promote the well-being and quality-of-life of citizens and communities. The global challenge of climate change adds to the complexity of our work.

We know that transport is a significant source of emissions, and that we need to take action to reduce transport related emissions, this is not without challenges. While 592,713 people live in the city, our daytime population is 1.5 times this (CSO,2023). The emissions from their commute, the goods and services they consume and their activities need to be addressed.

DCC is not responsible for the design or delivery of public transport projects, rather we work closely with the National Transport Authority (NTA) and Transport Infrastructure Ireland (TII) in the delivery of the current service and the develop of new schemes.

Current public transport projects at the development stage include:

- Metrolink 19KM Metro linking Dublin City to Dublin Airport and Swords
- Dart + will see the existing DART network grow from 50km in length to over 150km
- Luas (Light Rail) extension to Finglas
- Bus Connects will provide over 200km of enhanced walking, cycling, and bus infrastructure.

We have responsibility for the delivery of active travel routes. We will by 2030 have delivered 310 kms of new routes that support active travel. However, we know that providing routes is only one aspect, another is insuring that movement of people is facilitated.

Moving people through the city to meet friends and family, to go to work or school, or to simply explore must be easy and safe. Our intent is that we will bring together 95% of the population of the City within 400 metres of the active travel network; making it easier for people to walk, cycle, wheel or scoot to their destination or for leisure, day or night.

Challenging our ability to reduce emissions and improve movement through the city is our capacity to monitor movement.

We are in the midst of planning a new traffic management centre that will support improved movement through the city, and enable us to monitor modal shift.

Our partnership with Seoul Metropolitan Government is providing us with the opportunity learn from an exemplar system, TOPIS, that will enable the system that we develop to be more responsive.





Seoul

In the early 2000s, Seoul faced significant transportation challenges due to a combination of factors, including the proliferation of private vehicles, deteriorating bus service quality due to operator financial difficulties, and increasing congestion on the subway caused by a growing number of commuters.

To address these issues, Seoul initiated a Public Transport Reform in 2004. One key component of this reform was the introduction of Semi-public Bus Operations. This innovative system fostered collaboration between private bus companies and the Seoul Metropolitan Government to enhance service quality. It implemented a revenue-sharing model based on service distances, granting the city government the authority to determine bus routes, which could be adjusted in response to citizen demand. Alongside these bus route reforms, exclusive median bus lanes were introduced to prioritize bus service on the roads, improving efficiency. Over time, this network of lanes expanded to cover a total length of 124 kilometers as of 2022.

Another pivotal aspect of the reform was the implementation of an Integrated Fare System, centered on the concept of free transfers. Under this policy, Seoul's citizens could enjoy up to four free transfers regardless of the mode of transportation used, within a 30-minute window from the initial fare transaction, covering distances of up to 10 kilometers.

It's worth noting that free transfers are applicable when passengers use their transportation card, not cash. The introduction of electronic payment

systems via smart cards not only resulted in more reasonable fares but also enhanced convenience for passengers. Initially adopted by 82 percent of bus riders in 2004, smart cards are now utilized by 99% of passengers, with a 100% adoption rate for subways and 98% for buses.

Given these circumstances, there arose an urgent need for a cutting-edge transportation information system to provide high-quality services to public transportation users. Furthermore, the integration and management of diverse transportation data generated by various agencies, including the Seoul Metropolitan Government, the Traffic Broadcasting Network, the Seoul Metropolitan Police Agency, the Korea Expressway Corporation, and private enterprises, became imperative.

To address these challenges and support policy-related decisions, the SMG introduced "TOPIS 1.0" in 2004, a next-generation transportation system designed to predict and manage traffic conditions. This system enables timely assessment and appropriate responses to situations, along with the analysis of extensive big data statistics. TOPIS collects and manages data on Seoul's traffic conditions, integrates and processes transportation information, and offers a wide range of traffic information for analysis.

Subsequently, the system evolved from "Openness (TOPIS 2.0)" in 2008 to "Collaboration (TOPIS 3.0)" in 2013. Today, the city government is actively exploring opportunities to export the intelligent Seoul transportation system worldwide in collaboration with private companies. They are also committed to developing transportation policies for the city using big data in various fields.

DIGITAL TRANSITION IN CITIES

Dublin

Dublin City Climate Action Plan - Climate Neutral Dublin 2030:

Our new climate action plan includes actions that will further support our digital transition, specifically:

C1 Innovation Districts

Our Smart City programme is developing innovation districts that bring together diverse SMEs to create solutions that improve the city. Smart Districts are strategically selected locations across Dublin where innovation projects are fast-tracked. Smart Districts are designed in partnership with citizens, industry, and academia. Each Smart District is unique, with projects designed to meet the specific needs of those who live and work there.

C2 Decarbonisation Zones

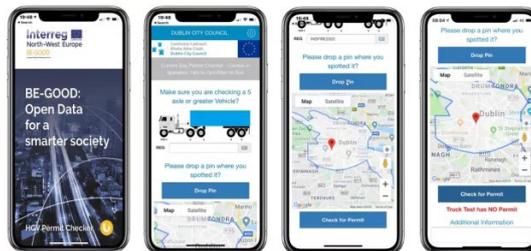
We will build on knowledge and experience gained from our smart districts, and develop our two decarbonization zones in Ringsend/Poolbeg, and Ballymun. The development of the decarbonization plans for Ringsend/Poolbeg, and Ballymun, will be a collaborative effort to insure that the unique strengths of each zone come to the fore and permits ownership of the challenges and solutions.

These actions stem from the following projects:

BE-Good

BE-Good is a pioneering project aiming to unlock, re-use, and extract value from Public Sector information to develop data-driven services in the area of infrastructure and environment. Together with BE-Good, Dublin City Council developed the HGV Checker app and Rate My Signals website.

HGV Checker App



In 2007 DCC decided to only allow HGVs with a specific permit in the city centre. HGVs without a permit need to take a different route to Dublin Port during the cordon hours of 7 am. to 7 pm. With this restriction, the Council is looking to improve the safety and well-being of more vulnerable road users like pedestrians and cyclists. The public can now assist the City Council's HGV Management Strategy by downloading the free HGV checker app. If they spot a 5+ axle vehicle they can check in real-time if it has a valid permit to be in the city and report infringements.

Rate My Signals

Dublin City Council has developed <https://ratemyservice.eu/TrafficSignalFeedback> through which road users can use to provide feedback on their experience of the traffic signals they come in contact with as part of their daily commute as they travel through the city.

DCC will use the analytics generated from this feedback to improve traffic flow through the City's traffic signals. This is achieved by more efficiently calibrating traffic signals to support road users in particular by introducing initiatives to improve accessibility at junctions for vulnerable road users such as children, older people, people with disabilities, or those with additional accessibility requirements.



Dublinked

Dublinked, is an the Open Data Portal for the Dublin Region, that enables citizens, researchers and businesses to reap the benefits of access to the region's open data. It is the key output of ROUTE-TO-PA, which was a multidisciplinary innovation project, that, combined expertise and research in the fields of e-government, computer science, learning science and economy, that sought to improve the impact, towards citizens and within society, of ICT-based technology platforms for transparency.

Dublinked currently hosts almost 300 datasets from across the four Dublin Local Authorities. The datasets available provide information on a host of activities across the Region; from information about sculptures in public parks, to pedestrian footfall indices, to commercial lease registrars.

Developing an Open Data culture within the Local Authorities promotes transparency and accountability to citizens, while also developing data literacy amongst staff, supporting evidence-based decision-making.

Open data generated by the Dublin Local Authorities and shared with the public can be used by businesses, technologists, app developers, researchers and entrepreneurs to develop valuable services for Dubliners and stimulate economic vibrancy.

Dublinked: Open Data for the Dublin Region

Where can you find information on noise levels in the city? Or locations to lock your bike?
Learn about where you live, work and play using Dublin's open data.

629 datasets

Arts Culture and Heritage	Environment and Energy	Planning and Land Use	Government and Participation	Recreation and Amenities
Population and Communities	Public Health and Safety	Economy and Innovation	Transport and Infrastructure	



Dublin City Air and Noise to Google Airview

The Dublin City Air and Noise Website was launched in 2019, which for the first time, amalgamated data from the air and noise networks, and in the case of air quality used the national air and health index to inform public behaviours around air quality. Dublin City Air and Noise to inform citizens on air quality, DCC has recognised the importance of improving citizens' understanding of air quality and how they can contribute to it's improvement.

DCC has also worked with academia to build awareness around air quality. DCC worked with UCD on iSCAPE (Improving the Smart Control of Air Pollution in Europe) a European research and innovation project active from September 2016 to December 2019. The project worked on integrating and advancing the control of air quality and carbon emissions in European cities in the context of climate change through the development of sustainable and passive air pollution remediation strategies, policy interventions and behavioural change initiatives.

Building on this DCC worked with Google Airview, which measured the air quality of Dublin City's streets over a period of 16 months. The project determined levels of six pollutants such as Particulate Matter (PM 2.5), Nitric Oxide (NO), Nitrogen Dioxide (NO₂), Carbon Monoxide (CO), Carbon Dioxide (CO₂) and Ozone (O₃) in the air.

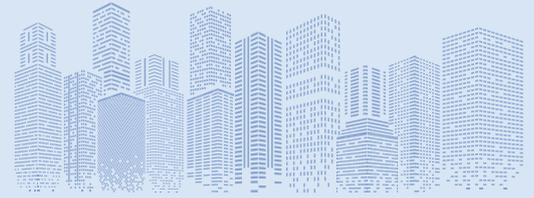
Future Aims: Data as an Opportunity for Collaboration

The data story of climate action cannot be reduced to a single data set divided across sectors. Emissions from one sector are inextricably linked to another. The consequences of emissions are interconnected and here today.

Dublin City and Ireland as a whole is experiencing changing weather patterns, with periods of unseasonably high temperatures, drought and intense rainfall. This is impacting on our air quality and water quality, as well as our soil quality, which in turn are having adverse effects on our health, and well-being.

Assessing our progress is an ongoing challenge. Data to monitor and understand our progress is both abundant and inaccessible. It is essential that DCC collaborates with data owners, and relevant stakeholders to collect and to analyse data in a coherent way that insures we are responding to the climate emergency in a manner that causes no harm.

To this end, we need an effective and efficient data management system to know if our actions are having an impact both in our "day to day" activities and over the long term on our National Climate Objectives.



Seoul

TOPIS : Transport Operation and Information Service

Seoul Transport Operation and Information Service, TOPIS, functions as Seoul's Integrated Transportation System (ITS) hub, collecting and managing data on traffic conditions, and processing transportation information. It serves as an advanced transportation information system capable of making rapid assessments and responses during emergencies, predicting and preventing transportation issues through comprehensive big data analysis.

TOPIS 3.0 is a smart metropolitan city management hub that manages transportation, disasters, and other security-related events in an integrated manner. Launched in 2013, it is an advanced transportation information system that allows prompt judgments and responses to be made in times of emergency and predicts and prevents transportation problems before they occur through Big Data analysis. TOPIS 3.0 has gained significant recognition overseas, leading to its export to Ecuador, El Salvador, Ukraine, among others, and draws over 3,000 visitors to Korea annually, including representatives of foreign governments and transportation specialists.

Progress

- 2000 ● Implemented ITS (Intelligent Transportation System) for urban highways
- 2004 ● Officially launched Seoul TOPIS
Revamped public transportation system, and introduced real-time bus operation management and transportation card systems
- 2005 ● Carried out 1st through 5th stages of TOPIS construction and Introduced Unmanned Enforcement System (linking and integration of individual systems, expansion of transportation information services for citizens, integration of traffic information websites, etc.)
- 2008 ● Implemented pilot installation and expansion of bus information terminals (BITs)
- 2009 ● Launched mobile traffic information service
- 2010 ● Opened traffic data to private sector
- 2011 ● Introduced standard designs (VMS, VDS) for ITS facilities
- 2013 ● Established and began operation of Seoul Integrated Safety Centre, with integrated transportation, disaster management and control functions
- 2014 ● Set up and implemented plan to commercialize TOPIS solutions and establish TOPIS business model
- 2015 ● Launched Seoul TOPIS platform (ITS Solution)
- 2019 ● Relocated computer equipment to Sangam Cloud Centre, and revamped TOPIS website
- 2020 ● Improved service for providing information on unexpected situations, and carried out upgrading of transportation policy system
- 2021 ● Consolidated comprehensive transportation conditions announcement system for cases of disasters, and renewed TOPIS English and mobile pages

Functions

Using cutting-edge equipment and devices, TOPIS monitors indicators related to Seoul's transportation system, disasters, and security situations on a 24/7 basis and allows prompt responses, thereby minimizing any potential damages.

1) Establishment of Transportation Policy Based on Big Data Analysis

Big Data analysis helps support road traffic and public transportation plans by analysing various data (traffic cards, operation information such as speed and location of buses, taxis, and subways, socio-economic indicators such as population and land use, etc.) collected by Seoul City. The data is used to establish efficient transportation policies, such as establishing measures to improve congested areas, confirming new bus routes, and adjusting subway service intervals.

2) Transportation Forecasting Using Big Data

Future road traffic situations, such as traffic speed and volume, are being predicted and announced based on the analysis of Big Data over a ten-year span. Citizens can refer to the traffic forecasts posted on the TOPIS website or mobile application to plan optimal routes and departure times. Private companies are also using the data to create maps and navigation services.

3) Real-time Road Traffic Control

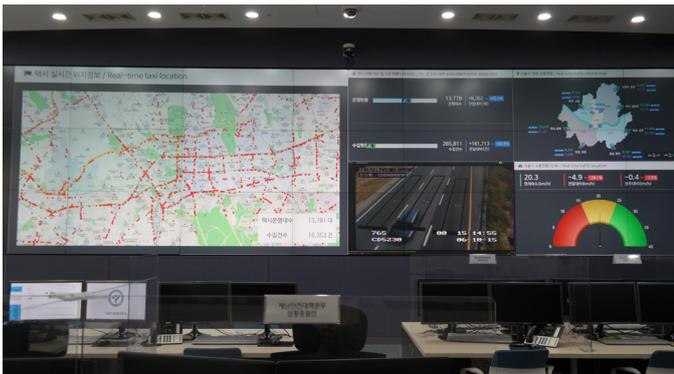
The system uses real-time taxi location information on the roads in Seoul to generate traffic speeds, automatically identify traffic problems such as congestion, and recommend a detour to prevent congestion.

4) Real-time Bus Operation Management

Based on data collected from GPS-equipped buses and transportation cards, bus operation intervals and detours are planned and managed. Passengers can obtain information on the location of a specific bus as well as its estimated arrival time and seating availability through the Bus Information Terminals (BITs) installed at bus stops and available via websites or smartphone applications.

5) Cutting-edge, Unmanned, Traffic Violation Monitoring System

Unmanned CCTVs detect vehicles violating bus lanes, bike lanes, and illegally parked vehicles, and fines are issued through an automated process.



Unmanned Enforcement System

Seoul TOPIS has installed and is operating an unmanned enforcement system to crack down on vehicles in violation of road regulations. The system regulates vehicles parked in no-parking areas or no-stopping areas for more than 5 minutes, as well as those violating various exclusive lane regulations.

The unmanned enforcement system collects the license plate information of a vehicle captured by the system. It then automatically retrieves the owner's information and address through the vehicle registration management system of the Ministry of Land, Infrastructure, and Transport, which computerizes and manages all vehicle registration information in South Korea.

Once the owner's identity and address are confirmed, an electronic fine bill and a photo for evidence collected by the system are sent to the post office. The post office subsequently delivers the bill to the vehicle owner. All of these processes are automated, and it takes only 2 or 3 days from the time of capture for the bill to be delivered to the person. Recently, it is also sent by mobile, allowing the vehicle owner to check in real-time and make mobile payments.

Pilot Autonomous Vehicle Service Zones

: Innovation of Future Transportation

The Seoul Metropolitan Government announced the “Seoul Self-Driving Vision 2030” in 2021 and plans invest KRW 148.7 billion over five years (‘22-’26) to become one of the world’s top-five self-driving cities. Starting with Sangam in December 2020, pilot zones have been operating in five areas: Sangam, Cheonggyecheon, Cheong Wa Dae, Gangnam and the Yeouido.

Currently, various commercialized services that all citizens can use are operating in pilot zones: passenger cars, small buses, and large buses. In the future, we plan to operate various means of public transportation using self-driving technology, such as self-driving robot taxis and late-night buses.

○ Sangam Area

The Nation's Largest Commercial Autonomous Vehicle Service Zone

- Roads: 32.9km (27 roads)
- Areas: 6.6km²
- Vehicles: Total of seven - six passenger vehicles and one small bus (including one for wheelchair users)
- Routes: 4



○ Cheonggyecheon Area

Small Buses for City Tour

- Roads: 8.8km
- Vehicles: three small buses
- Stops: Cheonggye Plaza and Sewoon Plaza
- * Scheduled to expand to Cheonggye 5-ga

○ Cheong Wa Dae Area

Low-Floor Electric Buses Identical to City Buses

- Roads: 2.6km
- Vehicles: two large low-floor electric buses
- Stops: 5

○ Gangnam Area

Robot Taxi Pilot Operation

- Roads: 85.3km
- Vehicles: 4 RoboRides of Hyundai Motor Company (IONIQ 5)
- * Currently undergoing test drives to go to a designated destination and not follow a fixed route.

○ Yeouido Area

Self-driving buses around the National Assembly

- Roads: 3.1km
- Vehicles: two small 13buses
- Stops: 6

C-ITS Infrastructure to Support Autonomous Driving

Seoul announced the beginning of the future mobility era by implementing the world's first commercialization service for C-ITS-based 5G convergence cars in 2020. With these technological achievements, we plan to lead transportation innovation based on safe connected cars and self-driving services by connecting "vehicles to everything" (V2X, Vehicle to Everything) and using the 5G commercial networks.

○ Establishment of Smart Road Infrastructure Based on V2X

- Provide traffic light color and remaining time by installing a signal opening device (CVIB) on the traffic signal controller
- Install deep-learning cameras in intersections and dangerous areas to detect jaywalking pedestrians and other issues
- Development and distribution of portable notification devices (communication + GPS, etc.) for emergency alerts, such as road collapse and construction

○ Distribution of the World's First All-in-One Terminal for 5G Connected Car

- The World's first all-in-one terminal that includes transportation cards, V2X, and operation management for 1,600 buses and 100 taxis
- Traffic safety services such as the collection of real-time road hazard information and collision and jaywalking pedestrian warnings
- Video exchange between vehicles using 5G commercial networks, including vehicle wireless communication features such as 5G/WAVE

○ Demonstration and Commercialization of 5G Connected Services Centered on Traffic Safety

- A service that exchanges hazard information between vehicles (V2V), vehicles and roads (V2I), and vehicles and people (V2P) using ultra-low latency 5G and WAVE
- Promotion of pedestrian safety and convenience by displaying information about passengers getting on and off on buses
- Preliminary notification to drivers of dangers ahead, such as accident risk zones, illegally parked vehicles, sudden stops and rapid deceleration
- Preliminary notification of dangerous situations that may occur during bus operation, such as congestion at stops, collisions with overtaking buses

○ Opening of Autonomous Vehicle Simulators with Digital Twin Technology

- The "pilot autonomous vehicle service zone" in the Sangam area has been implemented in the virtual reality world to provide simulated driving and technology development opportunities online prior to actual autonomous vehicle operation
- Open for free to universities, research institutes, startups, and overseas companies
- Reflected actual traffic environment: the urban environment, such as buildings and street trees, actual roads and traffic conditions, child protection zones, and weather conditions

SUSTAINABLE MOBILITY STRATEGY IN CITIES

Dublin

Draft Dublin City Centre Transport Plan

Dublin City Council, in partnership with the National Transport Authority, has published the draft Dublin City Centre Transport Plan 2023. The publication of this plan is an objective of the Dublin City Development Plan 2022 -2028. The Dublin City Development Plan 2022-2028 sets out an aspiring vision for the city, and in the area of transport sets out challenging and ambitious targets to be achieved, including a 40% reduction in general traffic and significant increases in walking, cycling and public transport.

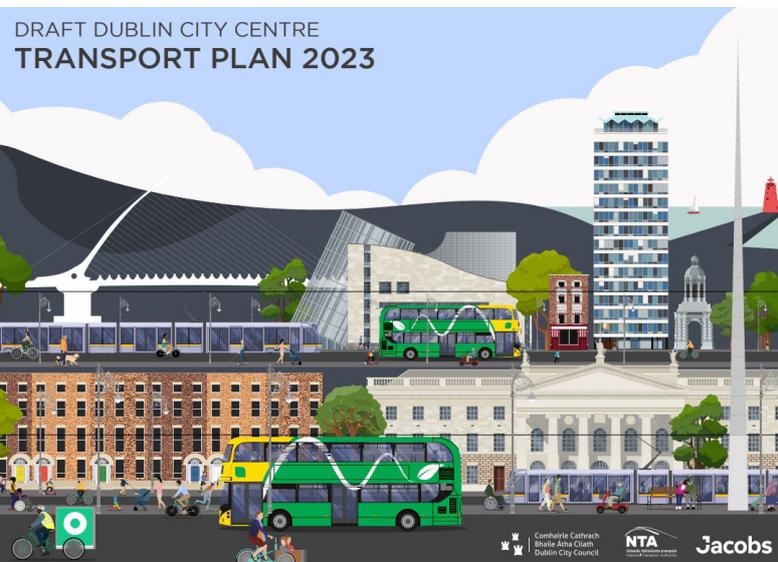
The overall transport vision in this plan is for a low traffic city centre with public transport, walking and cycling being prioritised. It draws lessons from the response to the Covid pandemic whereby low traffic volumes allowed ambitious changes to be undertaken in areas such as Capel Street, Nassau Street and along the North and South Quays.

The traffic management changes envisaged as part of this plan aim to significantly reduce volumes of car traffic in the city centre, opening space for the sustainable modes, and significantly improving the public realm by allowing greening and the development of new public spaces for residents, workers and visitors to the city centre. The draft plan is out for public consultation until Dec 1st, 2023

: <https://consultation.dublincity.ie/traffic-and-transport/draft-dublin-city-centre-transport-plan/>

A Re-Imagined Public Realm

Public squares and the spaces in between are where life's stories are born. In a time of climate change our public realm has a lot to do. Not only will public spaces need to bring people together to play, chat, and create, they must be resilient to climate change impacts - providing shade as temperatures rise and water storage when the rainfall is intense or absent. Aligning our plans for a vibrant night time economy, providing public lighting, street furniture, waste segregation, active travel and greening will be a critical part of re-imagining public spaces that define our city.



○ College Green Dame Street Project

The College Green Dame Street Project proposes to reinvent the historic College Green and Dame Street East area as a landmark public space at the heart of Dublin City.

The historic city core will be transformed; becoming an attractive pedestrian-friendly space that prioritises universal accessibility, social inclusion, sustainability, biodiversity and greening, while upholding and enhancing the history and heritage of this unique location.

Under these proposals, the area from College Green to the junction with South Great George's Street will become traffic-free, apart from timed deliveries and limited local access. The project will provide a world-class, multi-functional space, which complements some of Dublin's most illustrious historical buildings, notably Trinity College and the Bank of Ireland, allowing more space for people to enjoy cultural and recreational events, celebrations and social activities.

The reinvention of College Green has been a longstanding goal for Dublin City Council. This project provides an opportunity to create a safe, inclusive, accessible, public space for people of all ages to meet, relax and enjoy, and to achieve a greener and more liveable city.

DCC has undertaken an international competition to procure an Architect-led Multi-Disciplinary Design Team. This competition is currently ongoing and definitive timelines regarding project delivery will be established when the design team is appointed. The project will be co-funded by the National Transport Authority.

○ Pedestrianized Streets - Capel St.

In summer 2021 as the city was reopening for outdoor dining as COVID restriction were relaxed. Business owners on Capel Street approached the City Council requesting a reallocation of space by converting parking spaces to pedestrian and dining space. As space was being created, requests for a traffic free space were also received. This was explored and determined be possible. From June 2021 Capel Street became Traffic Free every Friday, Saturday and Sunday evening. It was well received this resulted in original six week period being extended to seventeen weeks.

By trialling these arrangements we were able to overcome concerns and fears that people may have had. On May 20th 2022, Capel Street became a permanent Traffic Free Street.

Since impletation :

- Pedestrian numbers increased by 17%
- Cyclists increased by 27%
- There has been approx. 1.5 million less vehicle trips in the area between O'Connell Street and Queen Street which is a massive reduction in volume, air pollution and noise pollution in the centre of the city.

The street is now undergoing upgrades to provide more public seating, planting and trees for the street.



○ **Initiatives DCC is collaborating to deliver :
Bus Connects**

The National Transport Authority's (NTA) Bus Connects programme is a key part of the Government's policy to improve public transport and address climate change in Dublin and other cities across Ireland, which include the National Development Plan 2021-2030, Climate Action Plan 2023, the National Planning Framework 2040 and the Greater Dublin Area Transport Strategy 2022-2042.

The Bus Connects project is a 2 Billion Euro project being undertaken by the NTA to substantially transform and upgrade the bus network in the greater Dublin area. The aim of the project is to increase the number of passengers using the bus network by 50% on 2017 figures.

The bus network in Dublin is the major public transport network and the bus carries 57% of all Public Transport users across the canal cordon, the Luas (tram) carries 11%. At the end of the bus connects project the Bus network is expected to carry 216 million passengers.

DCC is working closely with the NTA to roll out a new bus network and the provision of 16 bus corridors that will provide upgraded continuous bus lanes.



○ **SENATOR**

SENATOR was a 4 Year project in partnership with An Post, UCD and DCC Traffic focusing on smart logistics Smart loading bays. SENATOR aimed to create a new urban logistic model for enhancing the sustainability of cities. Following the completion of the project in 2023 Dublin City will be piloting 48 sensors in 9 locations in the city centre to improve traffic associated with deliveries.

○ **EV Strategy**

The Dublin Local Authority Electric Vehicle Charging Strategy was published in June 2022. https://www.dublincity.ie/sites/default/files/2022-08/dublin_la_ev_charging_strategy.pdf

The Dublin Local Authorities are currently working to deliver a pilot project of 200 EV Chargers across the region. This pilot project will target easy win locations in the public realm, establish a framework of operators and offer valuable learning opportunity for Dublin and other population centres in Ireland and abroad.



○ **Traffic Control Room**

The success (and continued success) of these mobility projects is dependent on our capacity to monitor movement in the city. An essential project for DCC from which we are learning from SMG is the upgrade of our Traffic Control Room.

A new Greater Dublin Area Control Room (GDACR) has been constructed as part of the National Train Control Centre at Dublin's main train station, Heuston Station. This new building is co-located with An Garda Síochána (The Irish Police Force) incident centre for the greater Dublin area. It is proposed that DCC will occupy and manage this new space for their main Traffic Control Room (TCR).

Current Traffic Control Room

DCC has an existing TCR located at our main office in Wood Quay, Dublin 8. The TCR operates on a 24-hour basis 7 days a week and can accommodate 10 staff. DCC personnel monitor traffic movements in the city, as well as on the Motorway network and strategic routes in other local authority by agreement. This TCR currently monitors 392 cameras in the DCC and surrounding local authorities and use the following systems to monitor and manage traffic movement:

- SCATS, a Computerised Traffic Signals System which operates in real time, adjusting signal timings throughout the network in response to variations in traffic demands, TCR operators can make interventions to the system to modify the flow of traffic for short periods in response to observed incidents on the network
- Bus Priority System (DPTIM), a specialised system designed for DCC which interacts with the SCATS system to track and provide priority for public bus routes through the DCC area
- Variable Message Signs (VMS), Fixed VMS signs are located on street and used to inform members of the public in relation to current traffic event, future events; such as planned roadworks or sporting or cultural events
- Parking Guidance Management System (PGMS), provided information in relation to available spaces in city centre carparks
- AFMS- DCC have a fault management system which automatically logs most traffic signal faults but also allows the TCR to log faults and queries reported by members of the public

As well as day to day monitoring of the traffic flow, for all major events such as sporting events in the city, state visits, protests, weather related or traffic incidents the control room monitor the event and liaise with other agencies such as:

- An Garda Síochána
- Emergencies Services
- Transport Infrastructure Ireland and their tunnel and motorway control room
- The bus and light rail operators control room
- Event’s organisers for major events
- Other DCC departments in relation to major traffic restrictions and roadworks

The control room is responsible for liaising with the above listed agencies and for modifying traffic signals to reduce delays.



View of the current DCC Control Room



View of the current DCC Control Room video wall

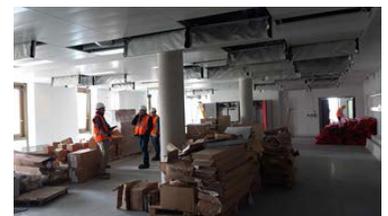
○ Future expansion of the Role of the Traffic Control Room

In order manage the operation of the key Bus Connects routes throughout Dublin a fully connected control room will be required which will allow for remote monitoring of the Bus Connects routes and also to interact with the different traffic management systems in surrounding local authorities to allow the TCR operators to monitor and modify traffic signals operations were necessary.

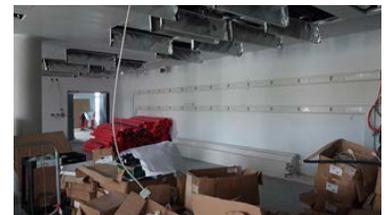
This new GDACR and will be capable of housing up to 32 staff at full capacity. The current plan is to keep the DCC TCR in operation but to develop the new GDACR to allow for greater communication between this TCR and all relevant agencies and other local authorities.

In the future, it is proposed that the GDACR will also house other Local Authorities both on site and remotely, based both in Dublin and nationally as Bus Connects is rolled out to other cities as well as a connection to the NTA’s office.

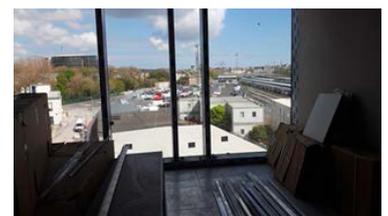
Below are some images of the current GDACR building, to date no final layout design has been agreed.



View of the main work area



View of the proposed video wall location



View from the meeting room area

Seoul

○ Green Transportation Zone

In March 2017, the Seoul Metropolitan Government designated 16.7km² inside the Seoul City walls as the nation's first green transportation zone to manage areas with excessive carbon emissions and severe traffic congestion in the city center. With the goal of reducing greenhouse gas emissions by 40% and car traffic by 30% by 2030, we are promoting concrete projects including restricting the operation of grade-5 vehicles, expanding pedestrian spaces such as Sejong-daero People's Forest Trail, and expanding eco-friendly transportation methods such as green circulation buses. In December 2020, Gangnam and Yeouido were also designated. However, the implementation has been put on hold for a while due to potential inconvenience it may cause to residents in COVID-19 periods.

- **Vision** : A people-centered city center for a convenient car-free life
- **Target** : A 30% reduction in car traffic in the Green Transportation Zone by 2030
- **Direction** : To reduce the demand for vehicles through the reorganization of major roads in the city center

Key Strategies

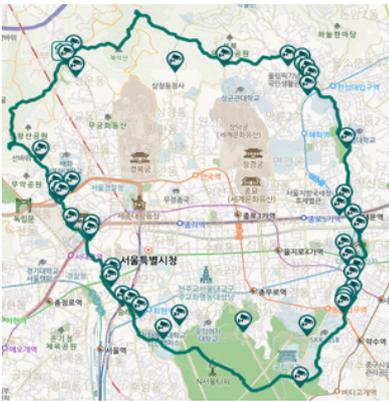
- 1) Expansion of green transportation facilities through spatial reorganization based on demand management
- 2) Vehicle operation management that takes into account the state of the atmospheric environment
- 3) Promotion of public transportation and encouragement of its use
- 4) Promotion of eco-friendly transportation
- 5) Strengthening traffic demand management policies



Restrictions on Vehicles in the Green Transportation Zone

We have restricted the operation of old diesel vehicles and other grade-5 vehicles in the green transportation zones of the Seoul City Wall to improve traffic congestion and air quality. Every day from 6:00 to 21:00, a fine of KRW 100,000 (once a day) is imposed to any grade-5 vehicle entering the green transportation zone of the Seoul City walls.

- Target area: Green transportation zones (inside the Seoul City walls)
- Target vehicles: Grade-5 emission vehicles among vehicles entering the green transportation zone
- Enforcement period: Everyday between 06:00-21:00
- Enforcement method: Automatic license plate recognition when entering boundary roads of the green transportation zone (45 entry points)
- Penalty: KRW 100,000, once a day



Overall Traffic and Grade 5 Vehicle Traffic in Green Transportation Zone (vehicles/day)

Category	Overall Traffic		Grade 5 Vehicle Traffic			
	Jul.2019	Dec.2021	Grade 5 Vehicles		DPF Not Intalled	
			Jul.2019	Dec.2021	Jul.2019	Dec.2021
Weekday	831,953	773,017 (Δ7.1%)	15,881	6,875 (Δ56.7%)	10,779	219 (Δ98.0%)
All Days (Including weekends)	796,717	721,218 (Δ9.5%)	15,506	6,426 (Δ58.6%)	10,798	217 (Δ98.0%)

Reorganization of Pedestrian Spaces

In the Green Transportation Zone, SMG aims to transform vehicle-centered roads into pedestrian-friendly areas by reducing car lanes, widening sidewalks, and extending green light times at crosswalks.

- City center (Seoul City walls) : 22 roads (28.76km) *7 roads completed
- Yeouido and Gangnam : 2 roads (4.30km)

Sejong-daero (Sejong street)

In April 2021, the Seoul Metropolitan Government (SMG) successfully concluded the construction project for the Pedestrian Forest Path on Sejong-daero. This ambitious initiative aimed to seamlessly link various parts of the Sejong-daero area with pedestrian-friendly forest paths along the roadside. Remarkably, this project was completed within just nine months of commencing construction in July 2020.

By creating a seamless connection spanning 1.55 kilometers from Sejong-daero Intersection to Sungnyemun Gate and Seoul Station, the revitalized road is rapidly emerging as a new focal point that is reshaping the character of Seoul.

The SMG has been actively advancing its pedestrian-centric road reform policies, prioritizing the needs of pedestrians by reducing road space for cars and expanding dedicated pedestrian walkways and green traffic areas.

For the first time, the SMG introduced the concept of an urban roadside forest, incorporating trees, shrubs, and flowers, transcending the mere reduction of car lanes. The Pedestrian Forest Path on Sejong-daero holds significant importance as it steers Seoul towards becoming a pedestrian-friendly city, where the entire urban landscape is interconnected by lush green forest paths.

With the completion of the Pedestrian Forest Path on Sejong-daero, it is anticipated to evolve into the quintessential walking route brand of Seoul. This path will connect major landmarks along Sejong-daero, including Gwanghwamun Square, Deoksugung Palace, and Sungnyemun Gate, offering a rich blend of culture, history, and scenic beauty while fostering integration among businesses, the economy, and the city's residents.



Before



After

- * Reduction of car lanes: 9~12 → 7~9
- * Sidewalk extension: 4~5m → max 12m

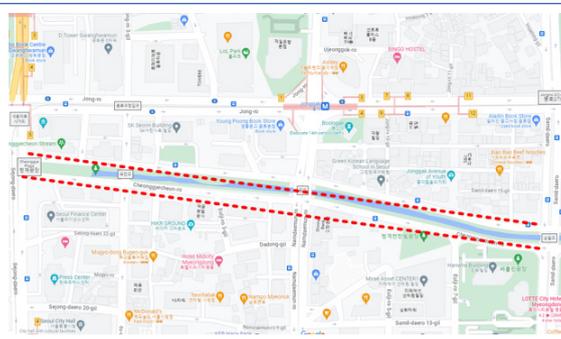
Car-free streets

As a part of efforts to create a pedestrian-friendly city, Seoul introduced car-free streets in 2005. Currently, there are 142 sites covering a total distance of 32,420 meters. SMG directly operates three sites, while 25 autonomous districts operate the remaining sites.



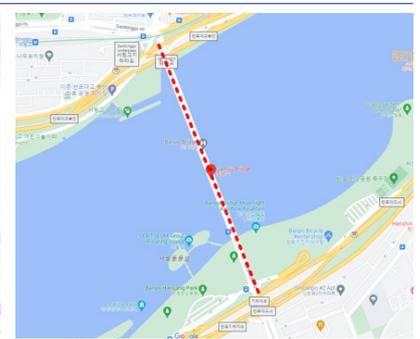
Deoksugung-gil car-free street

- Daehanmun Gate
Circular Fountain (310m)
- Weekdays
11:00 - 14:00
- Saturdays and holidays 10:00 - 18:00
- Sundays 12:00 - 18:00



Cheonggyecheon car-free street

- Cheonggyecheon-ro Cheonggye Plaza
- Samilgyo Bridge (880m)
- Saturday 14:00 - Sunday 22:00
- holidays 10:00 - 22:00



Jamsilgyo Bridge car-free street

- The north end of Jamsilgyo Bridge
- south end of Jamsilgyo Bridge (1.1km)
- Sundays 10:00 - 23:00
- from May to July and September to November

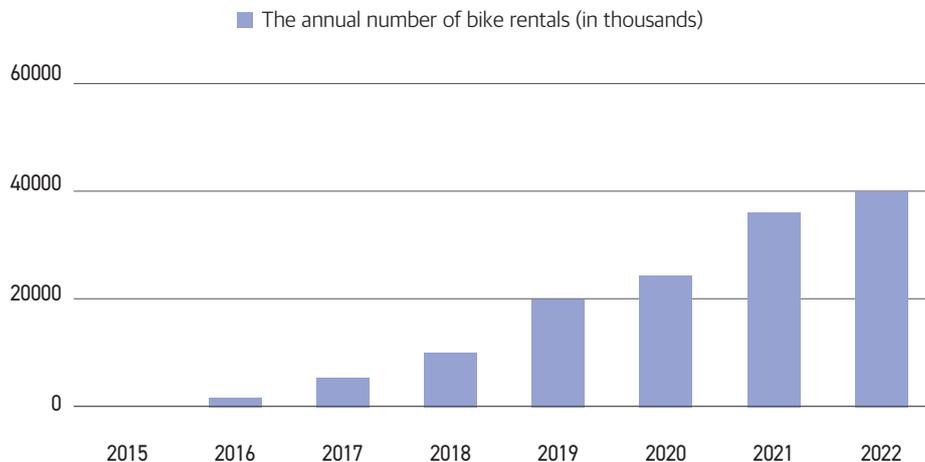
○ Seoul's Public bikes, Ttareungyi



The Seoul Metropolitan Government (SMG) introduced the Ttareungyi public bicycle rental service in 2015 as part of its commitment to providing a convenient and eco-friendly transportation option for everyone while addressing issues related to traffic congestion and air pollution. Known as Ttareungyi in Korean, this initiative strategically places rental stations in highly accessible areas near popular destinations all over Seoul. This means that whether you're a citizen or a visitor, you can easily access these bicycles and explore the city at your own pace.

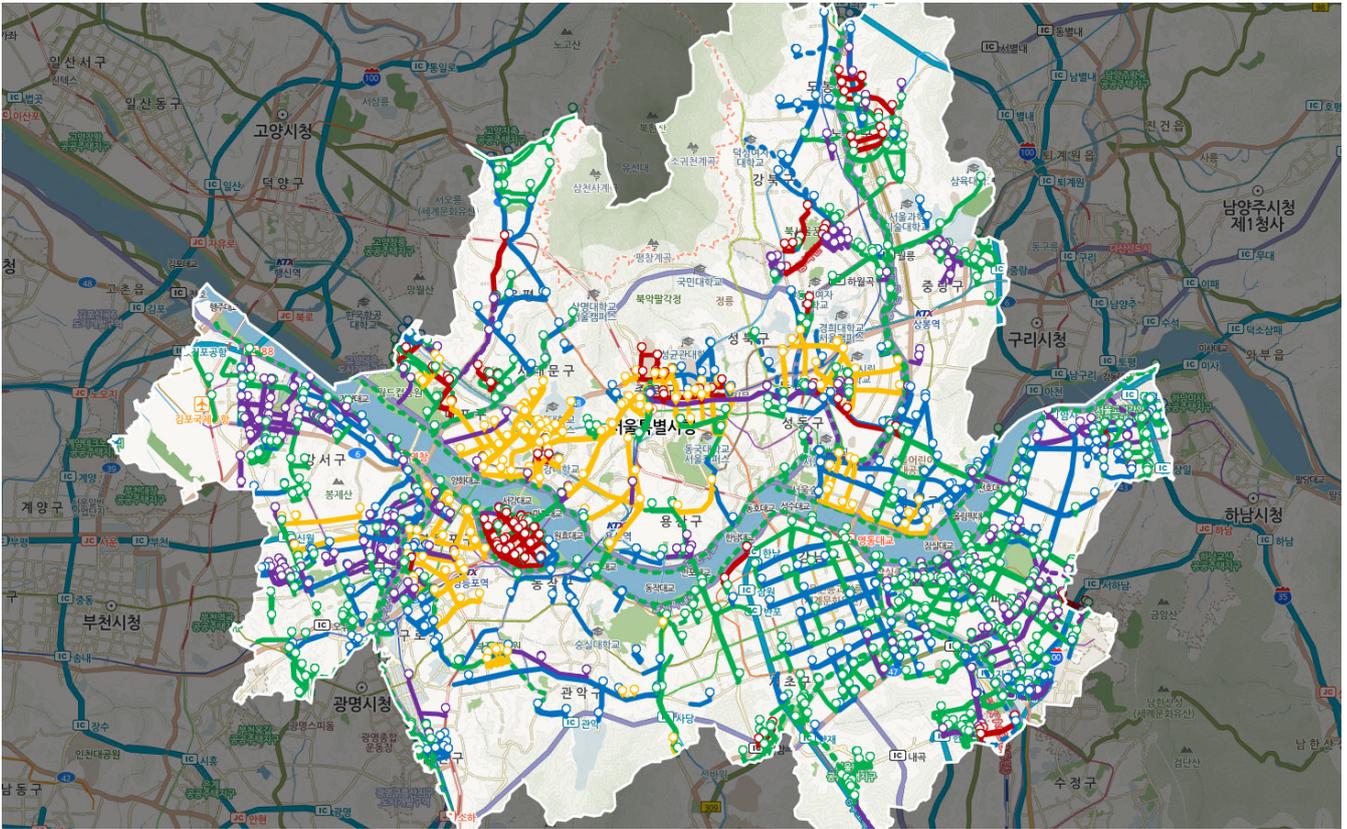
With the Ttareungyi service, both Koreans and non-Koreans alike can rent bikes throughout the city. To get started, simply install the Seoul Bike Ttareungyi app and purchase a pass using your credit card. When you're ready to ride, head to the nearest rental location and scan the QR code attached to the bikes. Pricing options are flexible, with rates such as KRW 1,000 for one hour, KRW 2,000 for two hours, KRW 5,000 for a month of one-hour rentals. If your ride extends beyond the allotted time, a surcharge of KRW 200 per five minutes will be added.

Whether you're an adult or traveling with kids, the public bicycle rental system caters to all, making it an excellent choice for families exploring the city. To ensure a seamless experience, we recommend checking the availability of rental stations and the number of bikes left in real-time through the Ttareungyi app or its official website (<https://www.bikeseoul.com>). Plus, both the app and website offer service in multiple languages, including Korean, English, Japanese, and Chinese, making it easy for everyone to enjoy this convenient and sustainable way to explore Seoul.



2,000 bikes 150 stations 34,000 users (2015) → 43,500 bikes 2,752 stations 3.9 million users (2023)

Seoul is actively developing the Cycle Rapid Transportation (CRT) system to encourage citizens to embrace cycling while ensuring the safe coexistence of bicycles with other modes of transportation on city roads. Our goal is to expand the cycle road network to 1,483 kilometers by 2026. The image illustrates the current map of cycle lanes, readily accessible through our Smart Seoul map platform, making cycling more convenient for our citizens.



current status: 1,315 routes, 1,316km → expand to 1,483km until 2026

<https://map.seoul.go.kr/smgis2/short/60jYu>



OVERALL COOPERATION BETWEEN DUBLIN AND SEOUL

Dublin City Council and Seoul Metropolitan Government started its cooperation on Urban Mobility and Digital Transition in 2021 through EU-funded International Urban and Regional Cooperation (IURC) Programme. As Dublin and Seoul cities have had overlapping challenges on transforming overall cityscape into greener place with establishing sustainable urban mobility, both cities exchanged their challenges and experiences focusing on promoting active travel, building public spaces, and managing traffic data through online bilateral meetings and on-site study visits.



In January 2022, Dublin shared with Seoul about their projects and implementation on the topic of walking and cycling. Dublin emphasized prioritizing pedestrians and cyclists around the city first and reflecting feedback from Dublin citizens as a whole during the process of implementation. One of the examples Dublin shared on reflecting feedback during implementation was the Bus Stop project. When the city was planning out this project, they sought out for the feedback from disability groups,

whose feedback was directly implemented in the project. Dublin not only shared its experiences about communicating with its citizens, but also on gaining insight from educational institutions that conducted research on the impacts of the city's intervention. The data and the direct feedback from the citizens helped Dublin City Council to understand and gain insight on various levels.

Alternative mode of transport in the post-pandemic era

The environmental and health benefits of cycling make it an essential alternative to urban transport

Health

Prevents illness

Personal mobility for social distancing

Reduces medical expenses (KRW 2.17M on average)

Health care

Prevents lifestyle diseases, enhances cardio-respiratory fitness, etc.



Urban transport

Reduces urban traffic congestion

Efficient utilization of space compared to vehicles
Solves the shortage of parking spaces

Increased use of public transit

Extremely advantageous when linked with public transit

More economical than driving

Low-cost and high-efficient mode of commuting/transportation



Environment

GHG reduction

Every 100 km cycled equal to 17 kg reduction in CO₂ emissions

Carbon offset effect of 1 tree

PM reduction

Improves air quality with reduced particulate matter



3

Background



Followed by the presentation from Dublin, Seoul continued to share knowledge through bilateral meetings. In April 2022, Seoul presented on the cycling implementation in the city, discussing how cycling can impact the city's general health, urban transportation, and the environment. Seoul shared that public bike usage has increased drastically during COVID-19. For Seoul citizens, it seems like cycling is a method of personal mobility that allows for social distancing. Thus, the ridership for Seoul's public bike system "Ttareungi" in 2020 nearly doubled, compared to 2019. Moreover, citizens not only showed interest in using the public bike system but also exhibited a high purchase of bikes in general. Due to these reasons, Seoul is continuing to meet the demand around the city and to satisfy the interest in cycling around the city with various projects.

After a series of online bilateral meetings, Seoul and Dublin finally conducted the first on-site study visit in Seoul from 29 August to 2 September 2022. Since it was the first time for both cities to meet in person after a year long online communication, Seoul and Dublin delegates focused on stepping further to more concrete partnership through this visit.



As traffic data management and sustainable urban mobility were Dublin and Seoul's focus areas, Dublin delegation visited Transport Operation & Information Service (TOPIS) located in the Seoul City Hall where the delegation learned about Seoul's traffic data collection and data visualization process. The delegation furthermore visited Seoul Public Bike Management Center and Write Brothers showroom to observe Seoul's bike rehabilitation program and public bicycle management system. Since expanding bike lanes and encouraging more citizens to use public bikes are main focuses of Dublin, the visiting delegation expressed high interest in deepening the partnership on the public bike management system with Seoul. Through this visit, both cities established strong and tangible urban cooperation action plan which are focusing on technical exchange between traffic data management center in both cities.



Seoul and Dublin conducted the second study visit in Dublin on 6-10 February 2023. Since it was a reciprocal visit, Seoul and Dublin delegates were able to refine the ideas for the future activity plans that were initially drafted during the last visit in Seoul.

The delegation from Seoul Metropolitan Government learned Dublin's Urban Development Plan focusing on cultural heritage protection and achieving livable neighborhood. After a bike tour around the city and a short visit to JCDecaux Ireland to learn about the private-public partnership on public bike operation, the delegation had a Letter of Intent Signing Ceremony at the Lord Mayor's Mansion. This Letter of Intent will consolidate the cooperation of both cities in the topic of Urban Greening on Nature-Based Solutions and the Promotion of Active Travel Modes.



The delegation furthermore visited Capel Street, the longest Traffic Free Street in Dublin, and Dublin Bay UNESCO Biosphere to learn about the Biodiversity Strategy of the city. Through this visit, Seoul and Dublin discussed consolidating the future cooperation plan focusing on Urban Greening and Urban Mobility. Since both cities are interested in achieving Circular Economy and promoting Active Travel Mode, they established potential pilot projects on conducting Upcycled & Recycled Bicycle Project, Walk & Bicycle Festival, City Greening and Technical Exchange on TOPIS.



Based on the strong partnership established by both cities' continuous commitment, Seoul and Dublin signed a Friendship Agreement with a four-year term and initiated the pilot project implementation on urban mobility data which was awarded by European Union with the IURC competitive fund. Through this Seoul and Dublin conducted a series of online technical exchange webinars and on-site study visit to Seoul in August 2023 to have a holistic understanding of Seoul Metropolitan Government's traffic control and cooperation between different traffic management centers which will improve data analytic capacity for both cities and building Dublin's new traffic data center.



ANNEX

○ Dublin's project links

Dublin City Air and Noise

<https://dublincityairandnoise.ie/>

Draft Dublin City Centre Transport Plan

<https://consultation.dublincity.ie/traffic-and-transport/draft-dublin-city-centre-transport-plan/>

Smart Dublin

<https://smartdublin.ie/>

Dublinked

<https://data.smartdublin.ie/dataset>

Rate My Signals

<https://ratemyservice.eu/TrafficSignalFeedback>

○ Seoul's project links

SMG's Transportation Policy

<http://english.seoul.go.kr/policy/transportation/>

TOPIS

<http://topis.seoul.go.kr/eng/english.jsp>

Seoul Urban Solutions Agency(SUSA)

<http://susa.or.kr/en>

Creating Cycle Rapid Transportation(CRT)

<https://map.seoul.go.kr/smgis2/short/60jYu>

Seoul's Public Bike (Ttareungi)

<https://www.bikeseoul.com:457/main.do?lang=en>

○ Media release links

Dublin-Seoul Case Study

https://www.iurc.eu/wp-content/uploads/2023/07/IURC_AA_Case-Study_Seoul-Dublin.pdf

Dublin visit to Seoul

<https://www.iurc.eu/2022/09/09/seoul-and-dublin-step-further-to-more-concrete-partnership-with-a-study-visit/>

Seoul visit to Dublin

<https://www.iurc.eu/2023/02/14/seoul-and-dublin-partnership-advanced-through-reciprocal-visit-in-ireland/>

Bilateral cooperation between Seoul and Dublin

<https://english.seoul.go.kr/bilateral-cooperation-between-seoul-and-dublin/>

Friendship agreement between Dublin and Seoul

<https://www.dublincity.ie/news/friendship-agreement-between-cities-dublin-and-seoul-signed>

EU-Korean cities Kick-off Meeting

<https://www.iurc.eu/2021/10/01/eu-korea-kick-off-meeting/>

EU-Korean cities Quarterly Meeting

<https://www.iurc.eu/2022/03/03/eu-korean-cities-quarterly-meeting/>

