

Construction, Utilization and Development Plan of Korea's Carbon Spatial Map



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Enact Carbon-neutrality Basic Act, South Korea

Timeline

- 2020.10**
2050 Carbon-neutrality Goal Declaration
- 2020.11**
Update NDC(40%)
- 2021.9**
Enact Carbon-neutrality Basic Act
「Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis」
- 2021.12**
Reform Urban and Rural Master Plan Guideline

Notable that

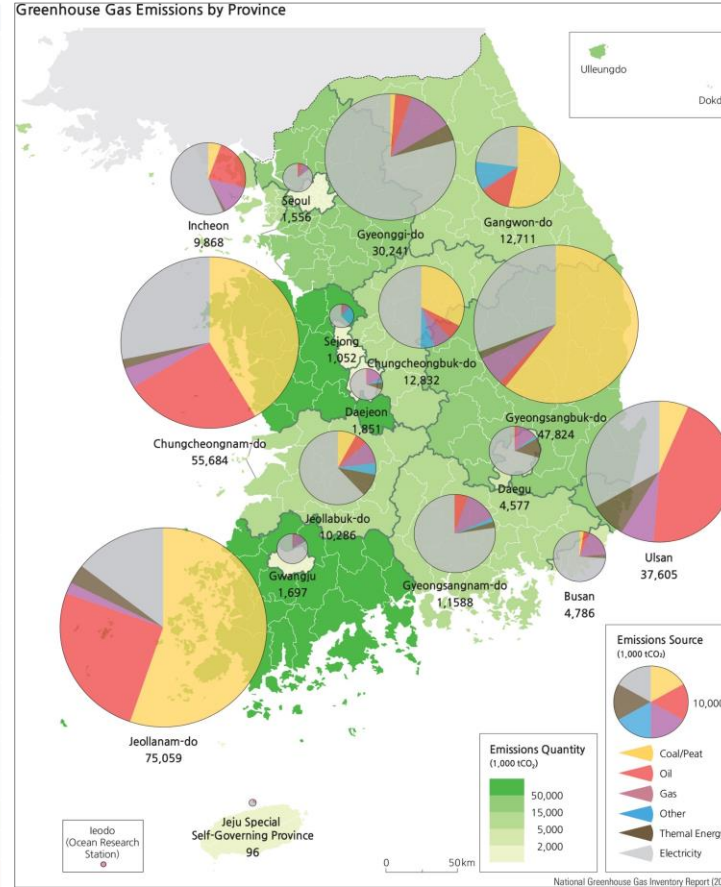
• **Establish Carbon-neutral Master Plan, every 5 years**
(Governments, cities, municipalities, counties,,)

• **Building a Carbon-neutrality Map and Applying Spatial Planning**

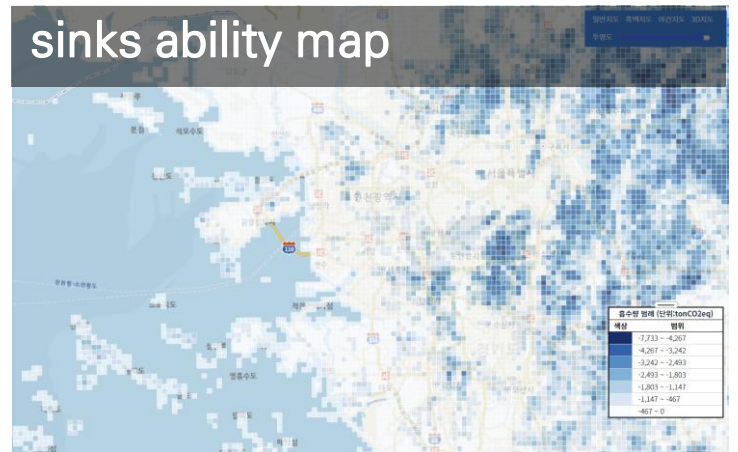
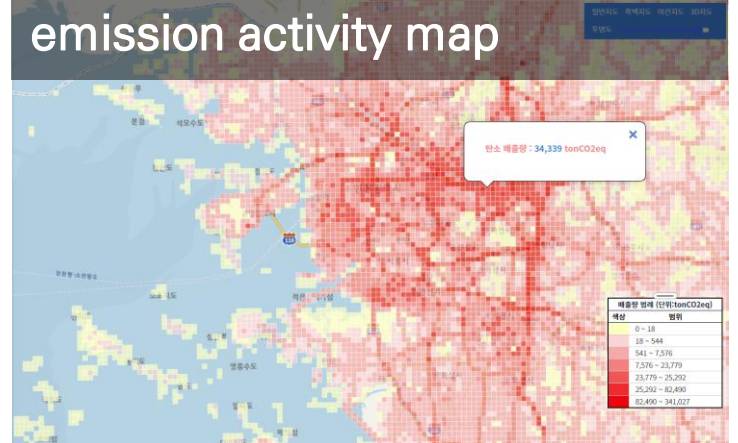
Why we built the map

Emission source-based statistics on carbon emission

Sector	1990	2000	2010	2018	2019	2020
Energy	240.3	411.6	565.7	632.6	611.6	569.9
Fuel combustion activities	235.2	408.9	561.9	628.2	607.4	565.7
Energy industries	48.4	136.1	254.8	286.4	266.2	237.0
Manufacturing industries and construction	76.6	130.6	162.9	188.0	187.6	181.6
Transport	35.5	69.9	85.4	98.1	101.0	96.2
Other sectors	74.6	69.8	55.8	52.5	49.6	48.0
Other	0.2	2.4	2.9	3.1	2.9	2.9
Fugitive emissions	5.1	2.7	3.8	4.4	4.2	4.2
Solid fuels	4.8	1.2	0.6	0.3	0.3	0.3
Petroleum and natural gas	0.3	1.5	3.2	4.1	3.9	3.9
Industrial process	20.4	50.9	53.0	55.8	52.2	48.5
Mineral industry	18.8	29.7	31.7	35.0	35.1	32.3
Chemical industry	0.4	7.5	0.7	1.0	0.9	0.9
Metal industry	0.1	0.1	0.3	0.2	0.2	0.1
Other	1.2	13.5	20.4	19.6	15.9	15.1
Agriculture	21.0	21.4	22.1	21.1	21.0	21.1
Enteric fermentation	3.0	3.4	4.3	4.5	4.6	4.7
Manure management	2.8	3.9	4.8	4.9	4.9	5.0
Rice cultivation	10.5	8.9	7.8	6.3	5.9	5.7
Land	4.6	5.2	5.2	5.5	5.5	5.6
Biomass burning	0.03	0.02	0.02	0.01	0.02	0.02
Waste	10.4	18.9	15.4	17.4	16.5	16.7
Solid waste disposal	7.5	9.5	7.8	7.8	7.7	7.7
Wastewater treatment	1.5	1.6	1.7	1.7	1.5	1.6
Waste incineration	1.4	7.6	5.6	7.1	6.4	6.6
Other	-	0.1	0.3	0.8	0.8	0.8
Total Emissions (Except LULUCF)	292.1	502.7	656.1	727.0	701.2	656.2
LULUCF emission and sink	-37.9	-60.1	-56.1	-40.3	-37.7	-37.9
Total Emissions (Include LULUCF)	254.2	442.6	600.0	686.6	663.5	618.3



Carbon Spatial Map



Launch the Carbon Spatial Map

www.carbonmap.kr

Launch Jun. 30. 2023.

Carbon Spatial Map

국토교통부 탄소공간지도 시스템

탄소공간지도란? 지도 서비스 국내/외 사례 배출/흡수량 산정방법론 데이터모델 설계 공지사항

탄소공간지도

대한민국의 온실가스 배출량을 시각화하다.

「2050 국토교통 탄소중립 로드맵(’21.12)」, 「탄소중립-녹색성장 기본법 시행령(’22.3)」에 따라 지역 주도 탄소중립 실현을 지원하기 위해 국토도시 분야 탄소배출 데이터 기반 마련

탄소중립형 스마트 도시 실현을 위해 최종사용자(end-user) 기준으로 탄소배출이 이루어지는 공간단위별 온실가스 배출량을 추산한 탄소공간지도 구축 및 서비스

탄소공간지도 바로가기

국토교통부

(9)30103 세종특별자치시 도움5로 11 국토교통부 Help Desk 070-5097-0973 Copyright © Ministry of Land, Infrastructure and Transport All Rights Reserved.

Total Amount

Emission

Absorption

색상	범위
적색	7,510 ~ 13,265
적황색	3,365 ~ 1,419
노란색	1,419 ~ 1,226
황색	1,226 ~ 1,178
주황색	1,178 ~ 10,104
주황색	10,104 ~ 36,869
적색	36,869 ~ 340,480

Launch the Carbon Spatial Map

System Properties

☑ Type

- Web-based system

☑ Spatial object unit

- Grid (1km, 500m, 100m)
- Administrative district
- Land use district

☑ Sector

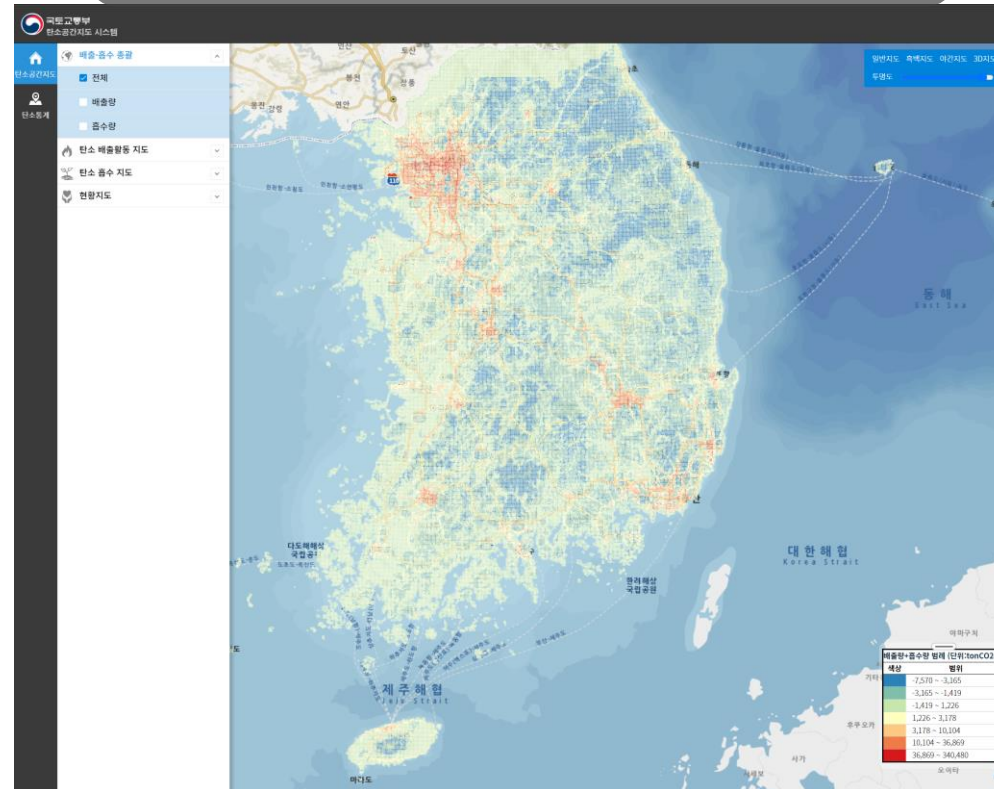
- Building
- Transportation
- Sink

☑ DB Update Period

- Annual

Carbon Spatial Map

Total Amount



Emission



What segments consist of the map

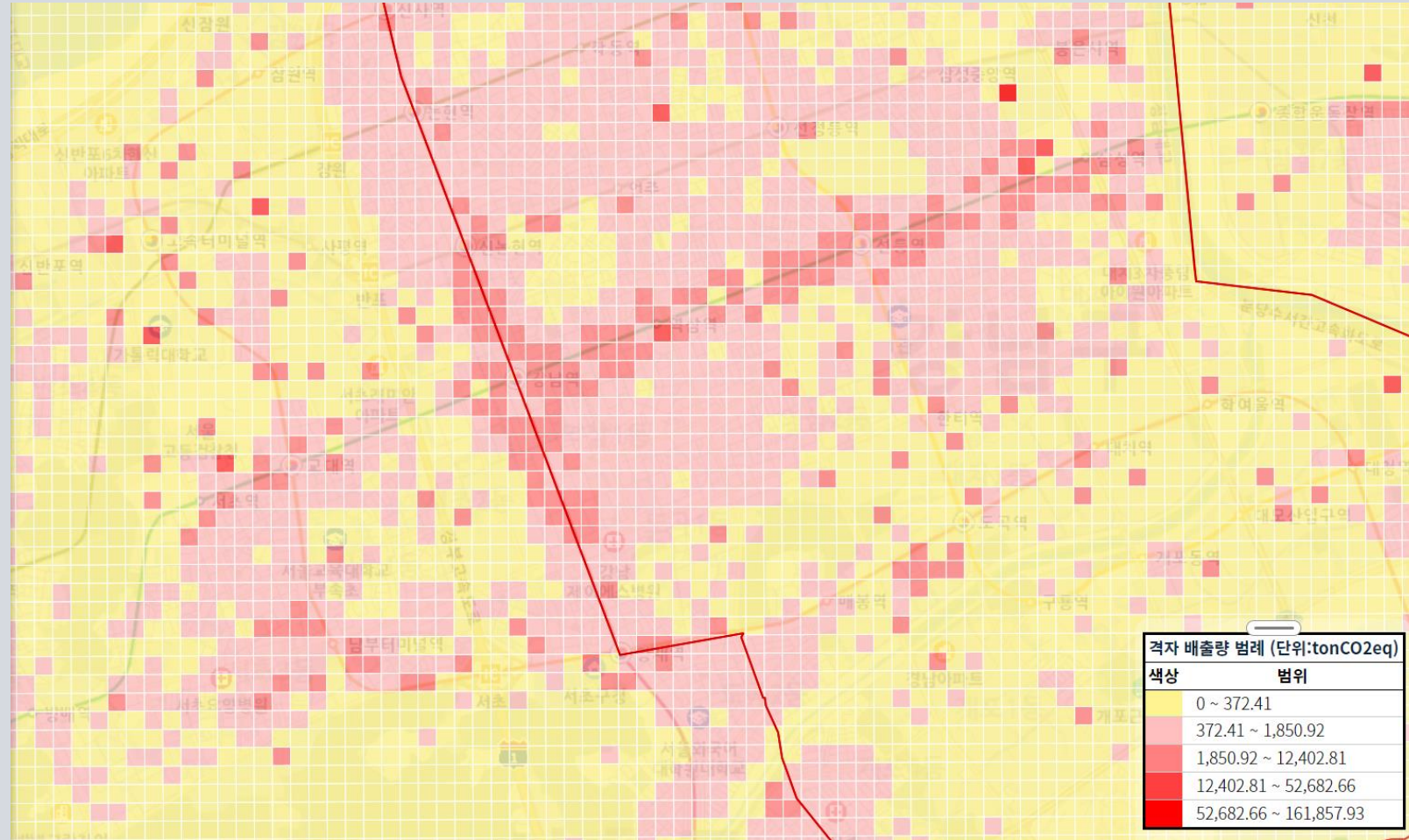
Building



Building Info.
(7.2 million)

Energy Info.
(electricity, gas, heating)

**National Building
Energy
Management System**



What segments consist of the map

Transportation

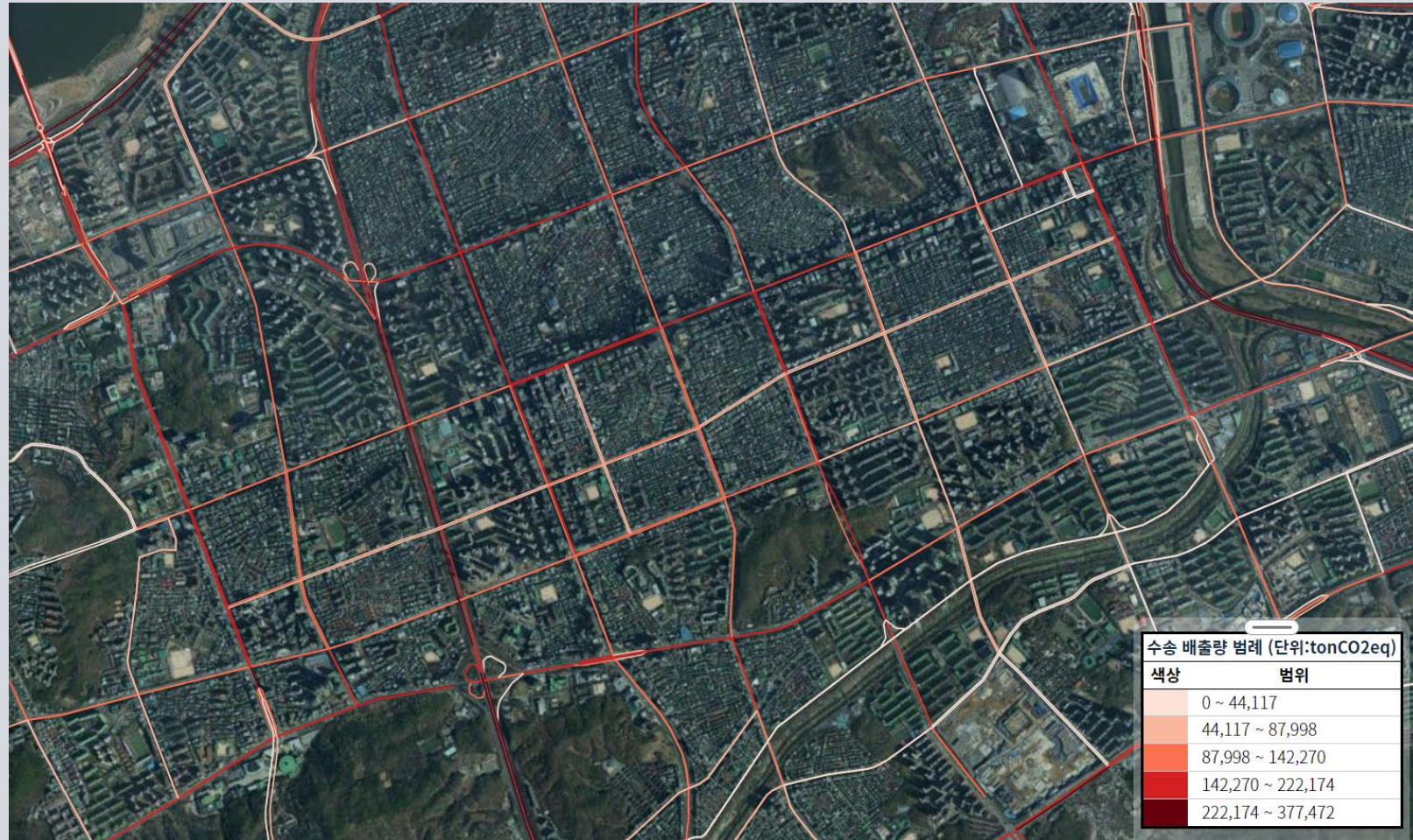
 KOTI KOREA
TRANSPORT INSTITUTE

e-나라지표

Road Network Map
(level5.5)

Estimated Traffic Volume
(vehicle type, mean vehicle speed)

Registration Info.
(vehicle type, fuel type)

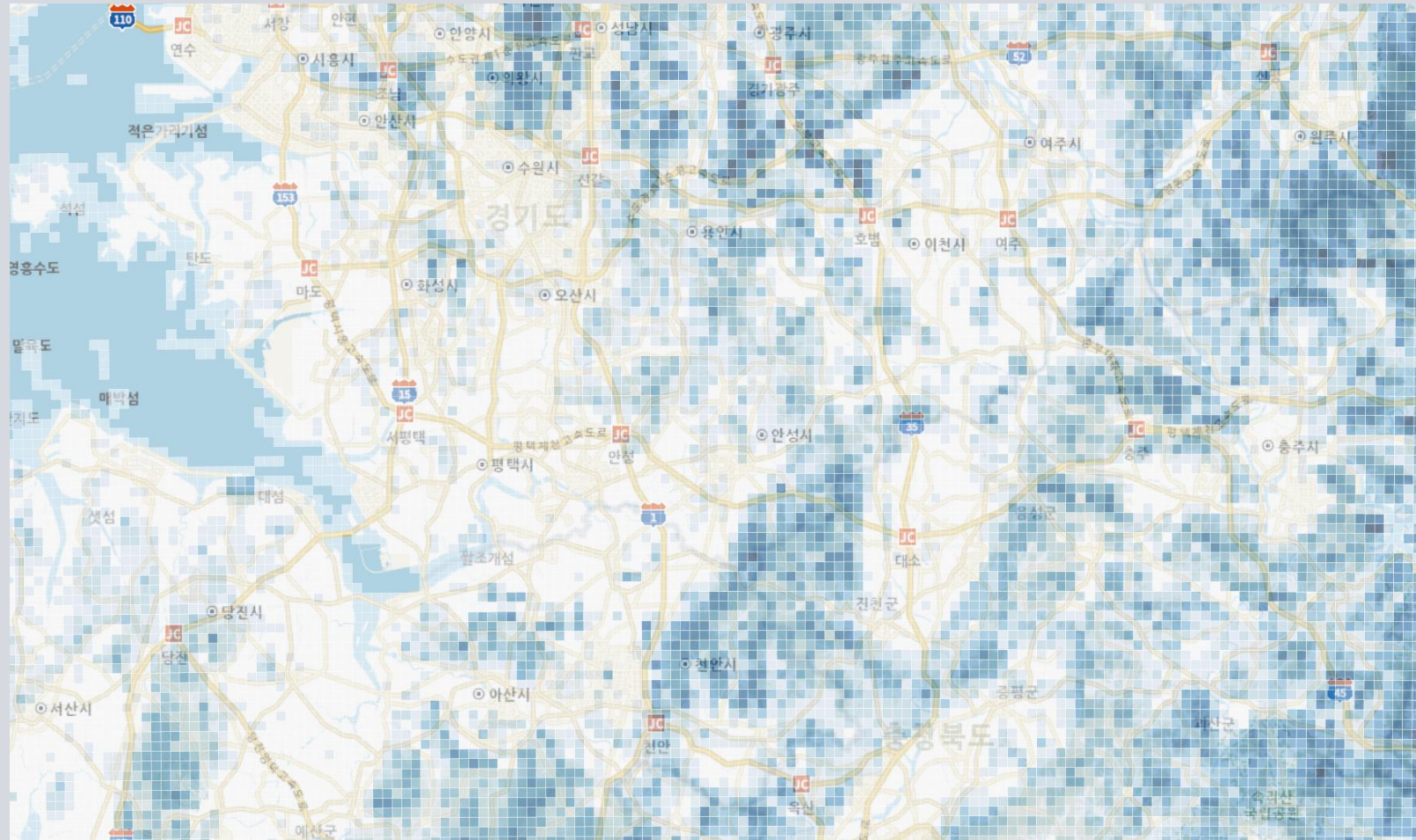
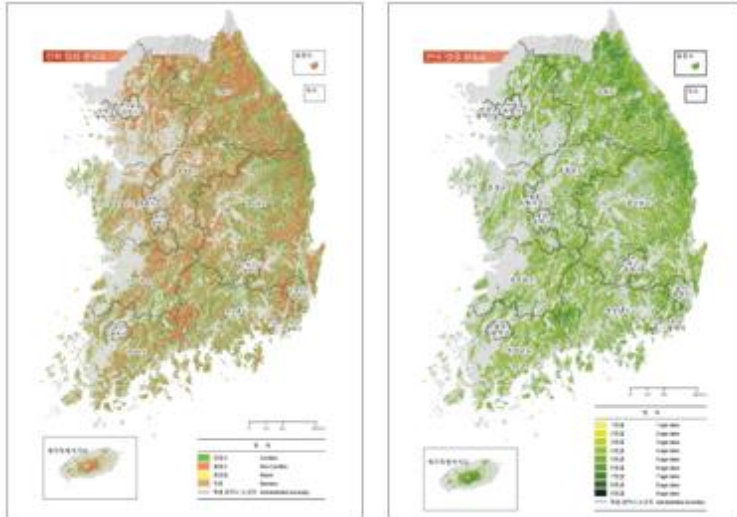


What segments consist of the map

Carbon Sink



1:5000 Forest Map



In addition, Statistics Information

National Statistics



총계

배출량 :
297,878,203 tonCO2eq
흡수량 :
74,986,446 tonCO2eq



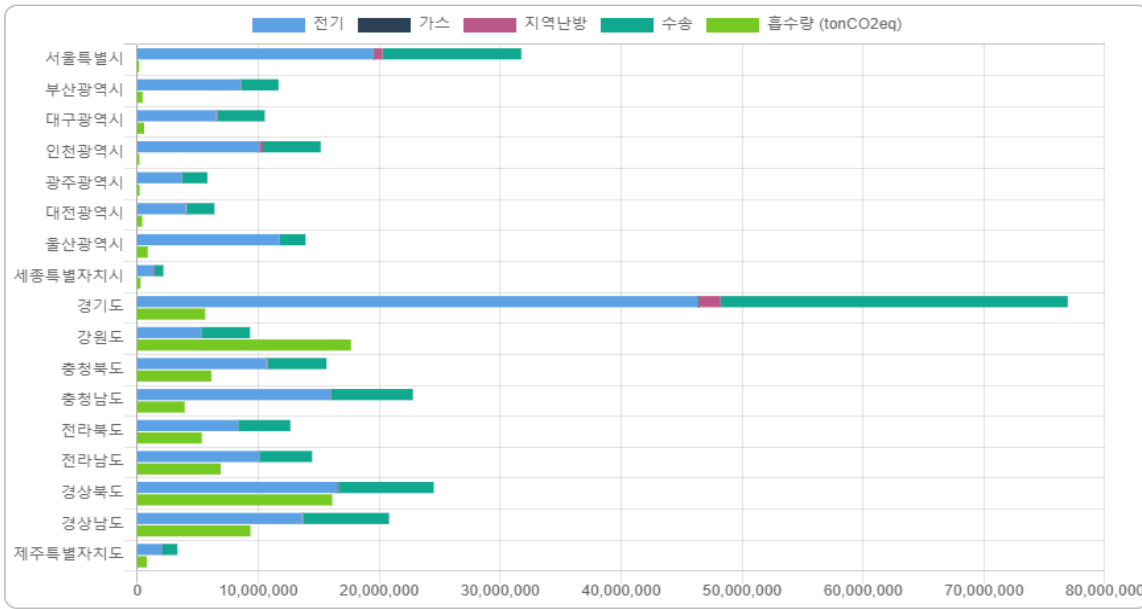
배출량

건물 배출량 :
198,156,355 tonCO2eq
수송 배출량 :
99,721,848 tonCO2eq



흡수량

산림 흡수량 :
74,986,446 tonCO2eq

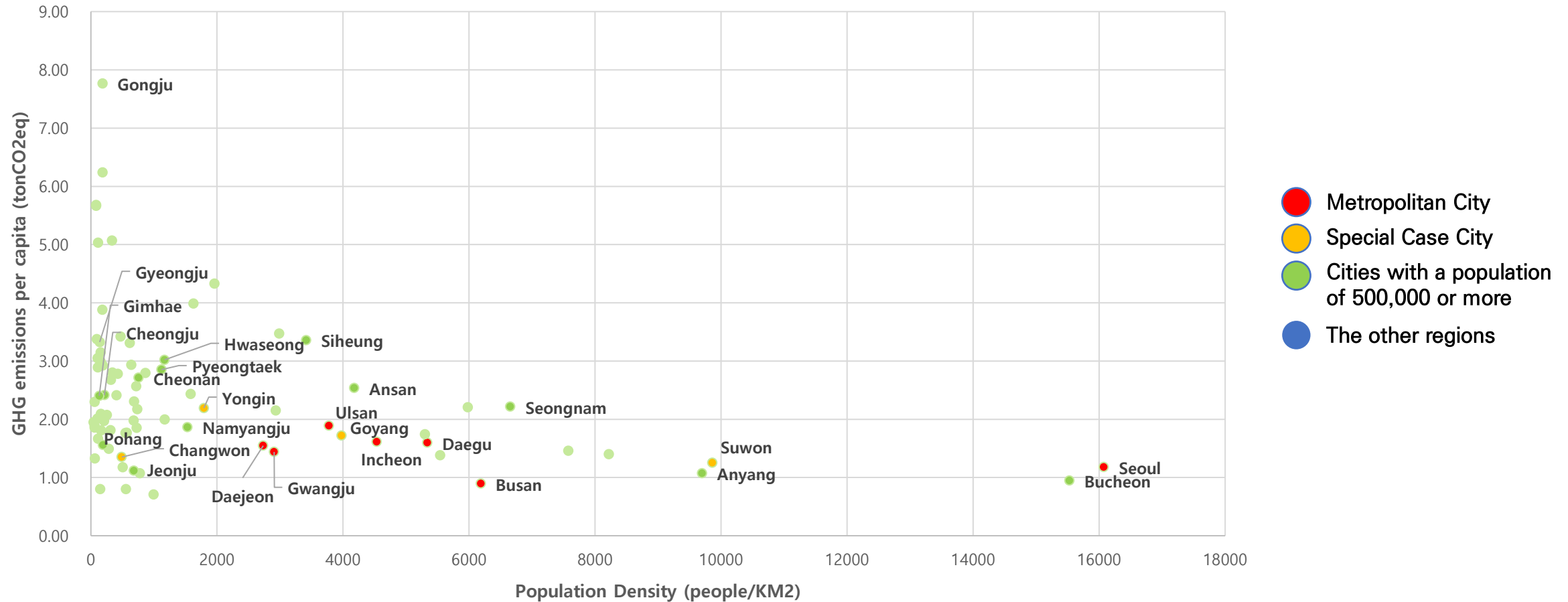


단위 : tonCO2eq

시도별	탄소배출량	탄소흡수량	총계
서울특별시	31,755,180	157,894	31,597,286
부산광역시	11,681,139	444,035	11,237,103
대구광역시	10,542,578	574,639	9,967,939
인천광역시	15,166,650	174,899	14,991,750
광주광역시	5,796,295	198,673	5,597,622
대전광역시	6,383,918	411,525	5,972,392
울산광역시	13,913,237	867,754	13,045,482
세종특별자치시	2,166,490	279,508	1,886,981
경기도	76,929,791	5,617,456	71,312,334
강원도	9,328,431	17,677,832	-8,349,402
충청북도	15,649,958	6,127,316	9,522,642

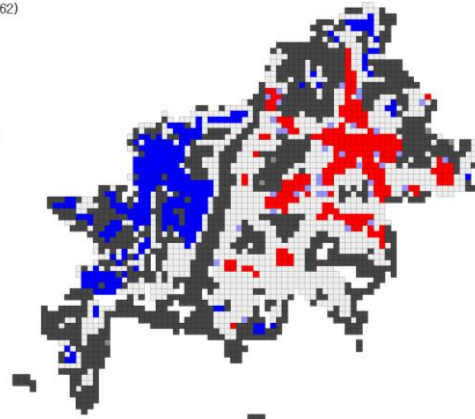
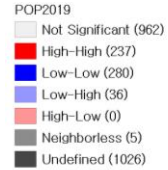
Expanding toward Urban Planning

The relationship between population density of 83 cities and GHG emissions in transportation sector per capita ('19)



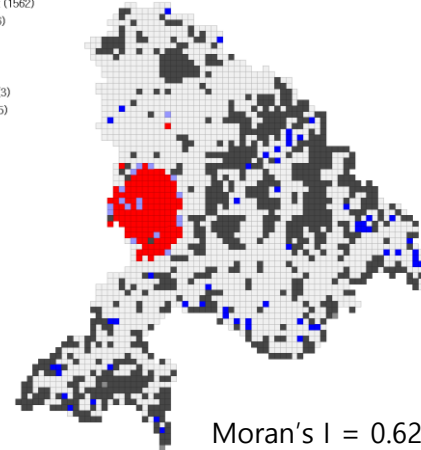
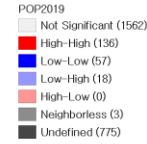
Expanding toward Urban Planning

Busan



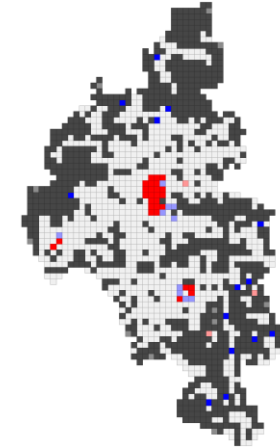
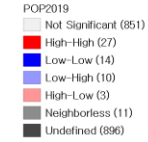
Moran's I = 0.545

Cheonan



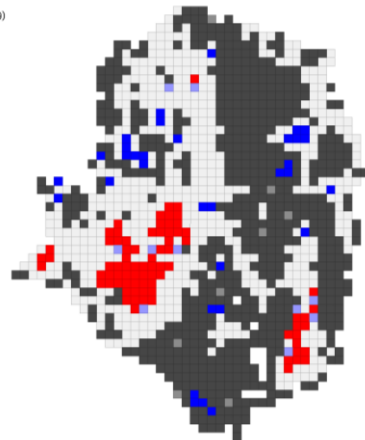
Moran's I = 0.628

Damyang



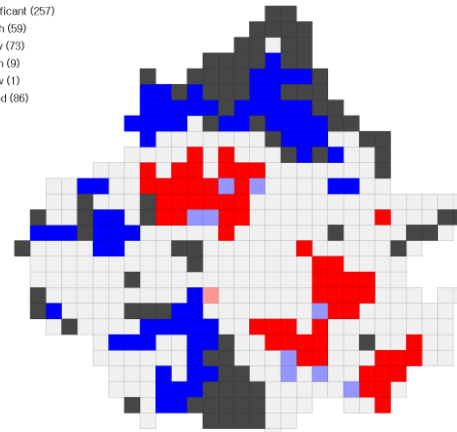
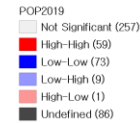
Moran's I = 0.326

Ulsan



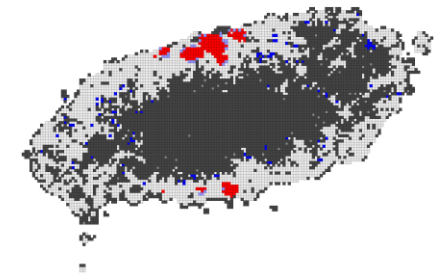
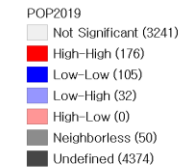
Moran's I = 0.478

Suwon



Moran's I = 0.427

Jeju



Moran's I = 0.638

Let's continue the conversation!

Post questions and comments in the IAIA24 app.



#iaia24

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