

# **In Pursuit of “Smart Cities” To Re-kindle A Nation from Stupor & Decline**

**The Case of  
Korean National Pilot Smart Cities**

June 2020

Inhyok Cha

**Apologies:**

**I won' t be talking much about  
IoT in this talk**



**Cir. 2016~2017**

**Somewhere in East Asia**

**... Leaders of A Nation Worried  
About Their Country ...**

**Stalled  
Economic  
Growth**

**Losing to  
Competitors**

**Unhappy  
Citizens**

**Loss of  
Vitality**

**Deeply  
Divided**

**And They Looked For  
Possible Solutions**

**New  
Strategic  
Industry?**

**More  
Strategic  
R&D?**

**A New  
Symbol of  
Re-start?**

**Massive  
De-  
regulation?**

**New Objects  
For Unity?**



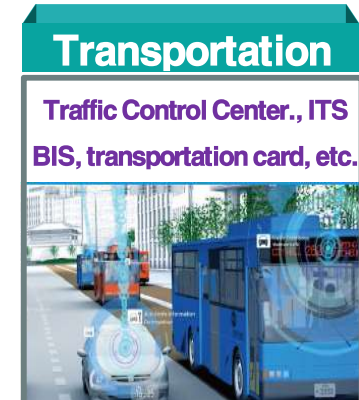
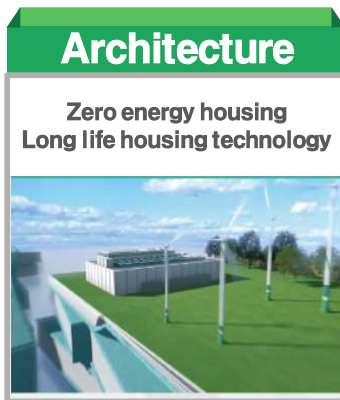
**Then they  
“found”  
their cities**

# Noticing on the Strengths of Its Cities

## Korea's Smart City Competitiveness Evaluation

### 1. World-class Information & Communication Tech & Infra

### 2. Advanced Smart-City Component Technologies

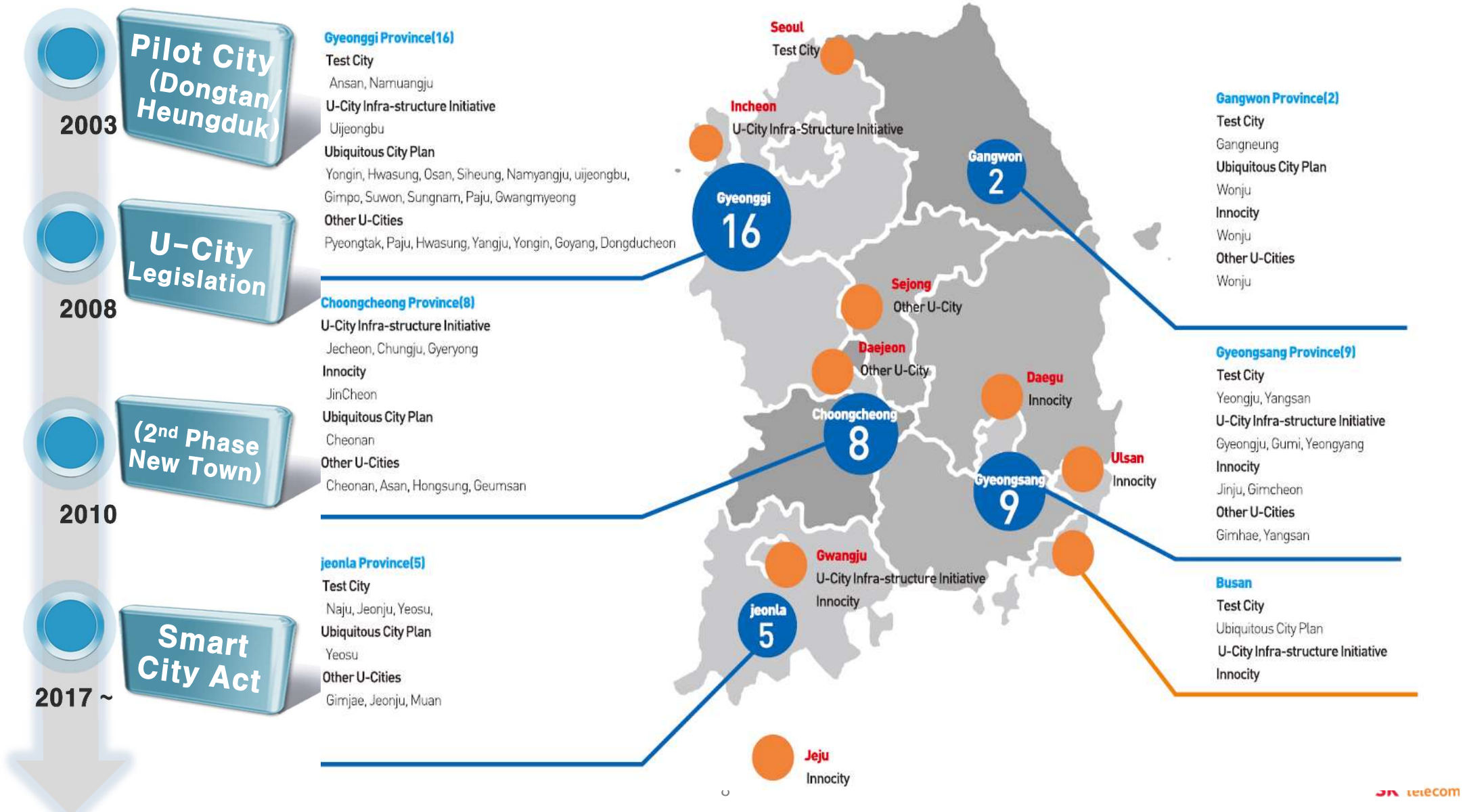


### 3. Experience and Culture of Fast, Large-Scaling Urban Projects

Korea has a competitive urban development model that combines in-depth development know-how and advanced smart city technologies

# And Its Long History of “Smart City” Explorations

**73** Smart City projects under way nationwide





# Then They Launched the **National Smart City Project**



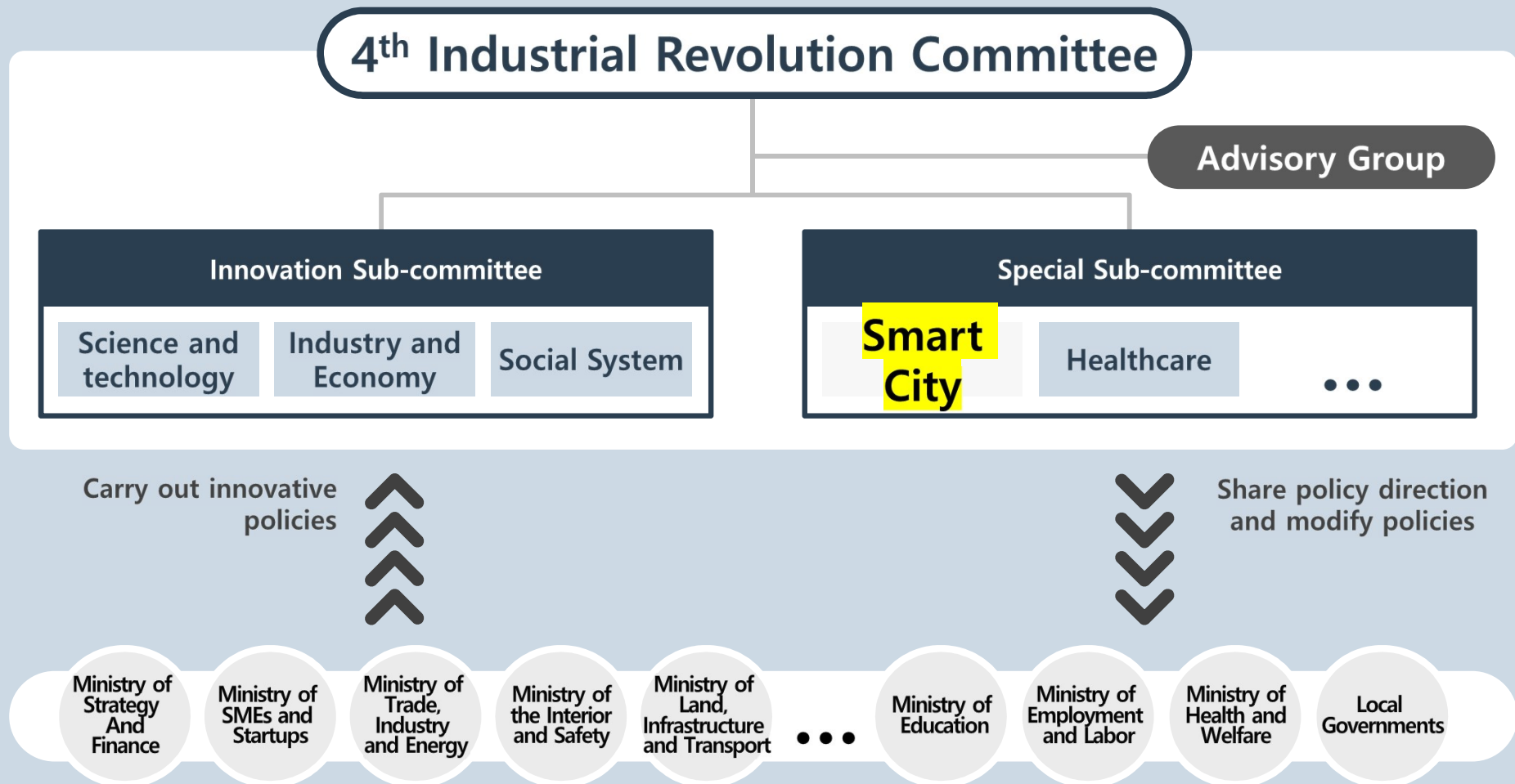
**I would like to pursue a national smart city project, a smart city developed by the nation from the scratch, aside from the existing smart city initiatives**  
**President Moon's comment on Aug. 29, 2017**

Based on the achievements and lessons from the past,  
a new smart city policy was announced.

# Under the Broader Strategic Initiative on Future Growth

## Presidential Committee on the **Fourth Industrial Revolution**

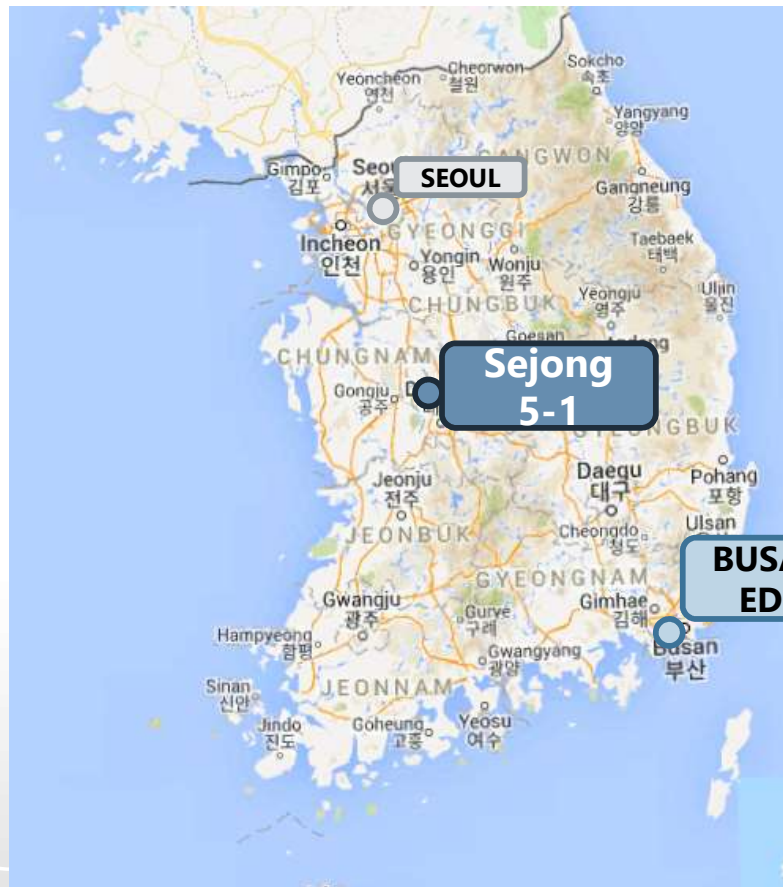
The Korean government established the Presidential Committee on the Fourth Industrial Revolution and started consensus-building for changes



# National Pilot Smart City Project

**As a Spearhead of National Will and Vision for Rekindled Vitality**

*A test bed for high-tech, industrial convergence, advanced smart city platform, citizen-led city problem solving, an ecosystem for innovative businesses, and global partnerships*



	SEJONG 5-1	BUSAN EDC
Area	2.7km <sup>2</sup>	2.2km <sup>2</sup>
Planned population	29,000	8,500
Project expense	~\$ 700 Million (800 Billion Won)	~\$1.2 Billion (1.4 Tril. KWW)
Project period	~'22.7	~'21.7



# National Pilot Smart City Project

As a Spearhead of National Will and Vision for Rekindled Vitality

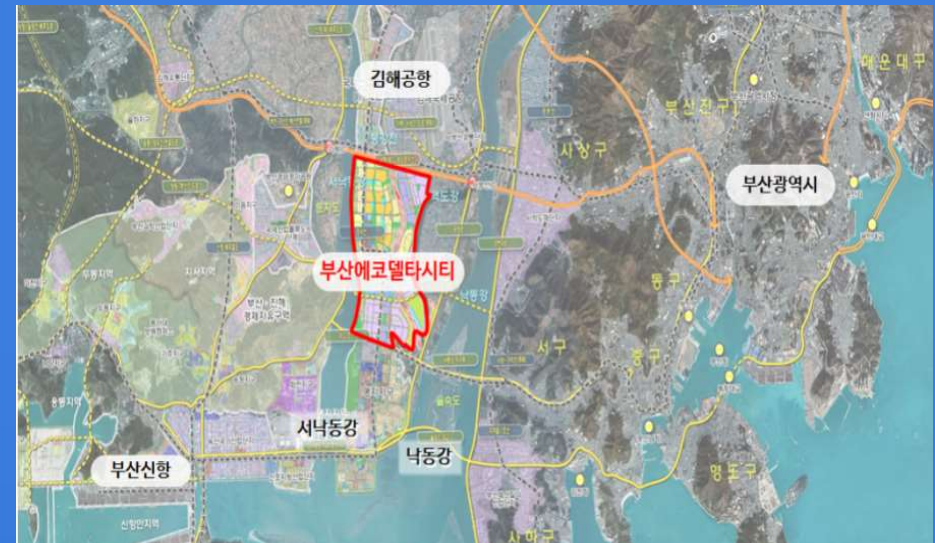
## Sejong 5-1

- (Location) Sejong City
- (Area) 2,741,000 m<sup>2</sup>
- (Developer) LH



## Busan Eco-delta City

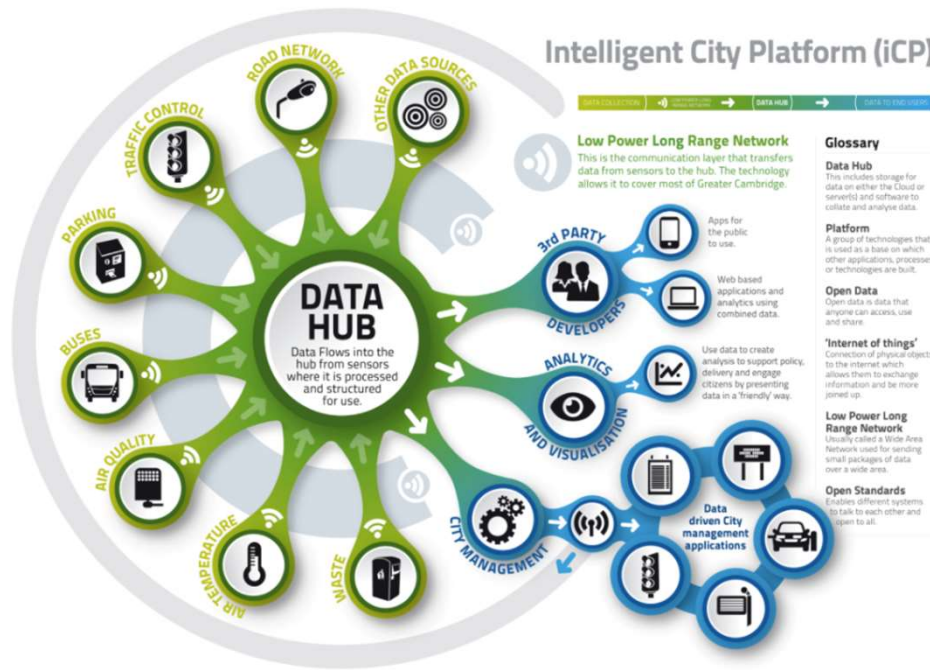
- (Location) Busan
- (Area) 2,194,000 m<sup>2</sup>
- (Developer) K-water, BMC, Busan City



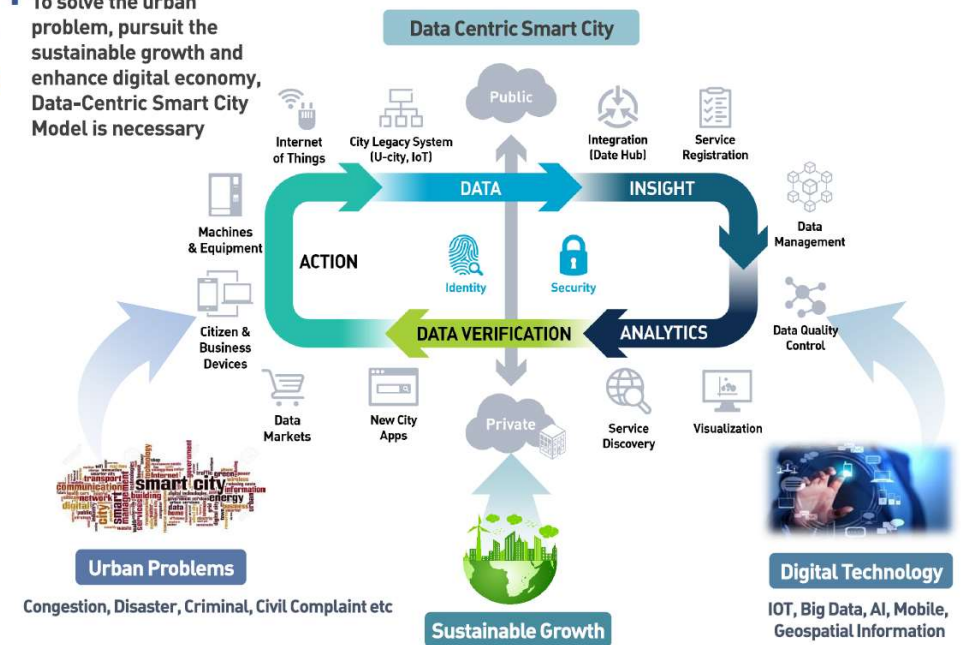
# National Smart City Platform R&D Project

## The “City Data Hub” Project

- A pilot project where cities build a data hub and introduces the AI and Big Data to city operation and management  
(National Strategic R&D, 18–22 years, budget: ~\$ 95 Million USD)
  - To be Implemented in Two Cities: Dae-Gu, SI-Heung



- To solve the urban problem, pursue the sustainable growth and enhance digital economy, Data-Centric Smart City Model is necessary



Source : Smart Cambridge



# Adoption of Customized Technology to Increase Urban Value

## Customized Tech Modules for 100+ Services, Present & Future

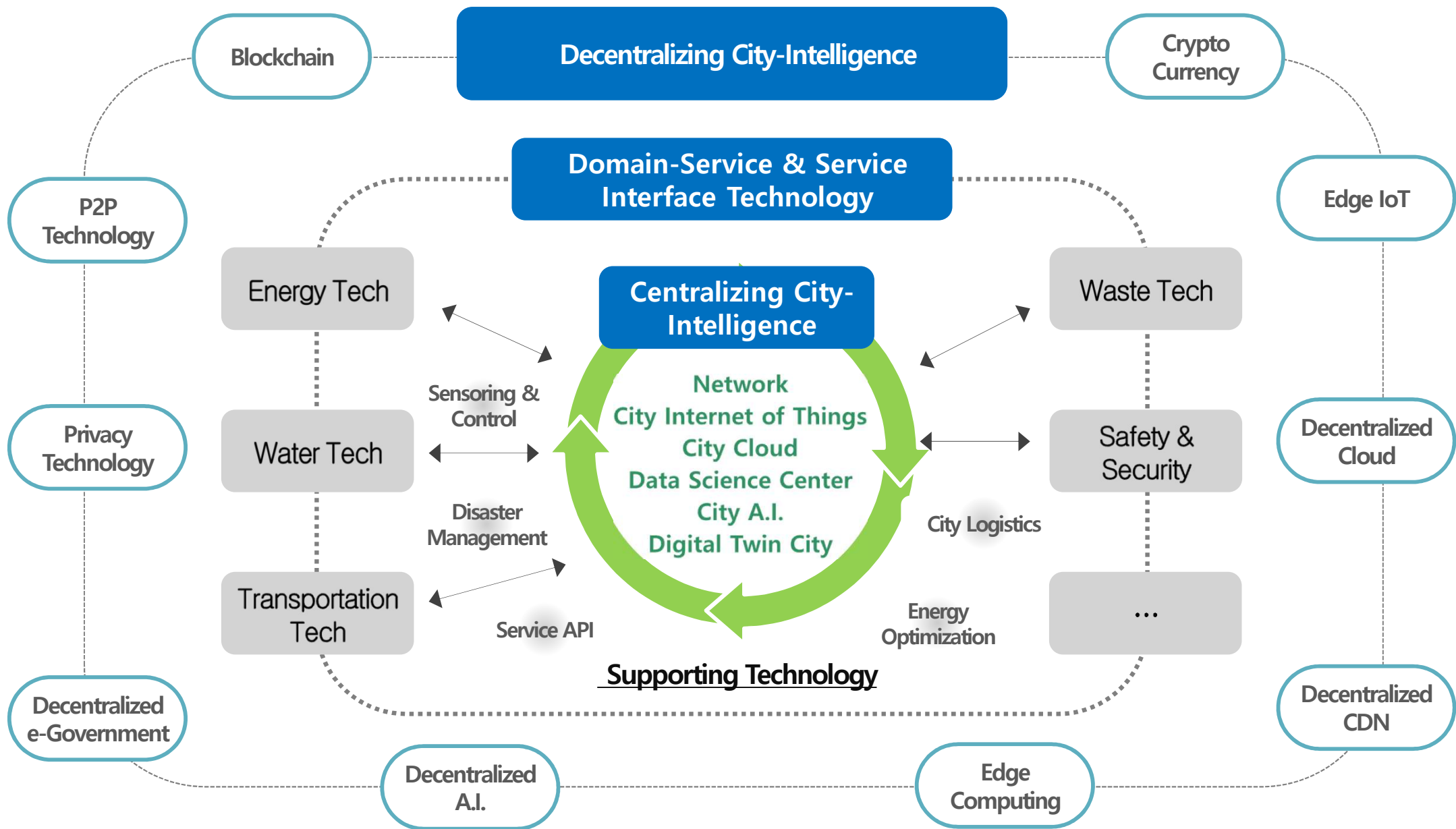
▪ (Commercialized technology) Applied to existing cities

▪ (Technology before commercialization) Applied to pilot smart cities





# Working on Future City Platforms Too



## **2. National Pilot City, Sejong 5-1**

---

## Value and philosophy of Sejong Smart City

### Post-materialism

---

Lifestyle-oriented, Work-life balance

Human-centered, Environment-friendly

### Decentralization

---

Sharing, Open, and Distributed

Diversity- and Community-based

### Smart technologies

---

Data-driven, Artificial Intelligence

Creative Innovation



## Cities provide with "Creative Opportunities"



“ A city is where smart people come together and learn from each other. ”

Working together can make miracles happen.  
All great inventions were borne of mutual connection among geniuses.



Information shared among many people



Great education



Decent jobs



Diversity and complexity



Robust infrastructure and active communication



Competition and cooperation

# Sejong 5-1: Concept

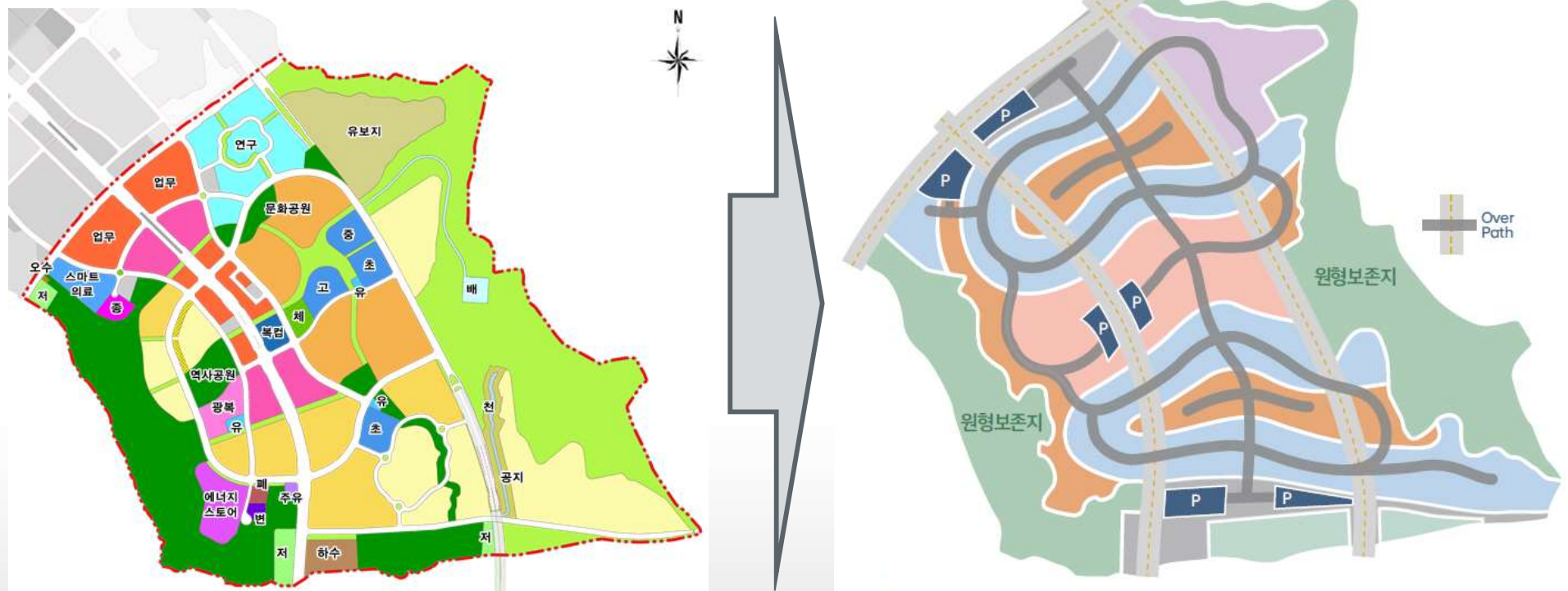




# Sejong 5-1 : Concept

## Differentiation in Urban Design

- City running on car-sharing services: transportation via autonomous vehicles/ bicycles
- Shift to “Form Based Code” for flexible land use and zoning





## Sejong smart city Structure

## Share-based car city

All owned cars are parked at the entrance of Sejong smart city and people move by utilizing autonomous cars, sharing cars or bicycles in the city.

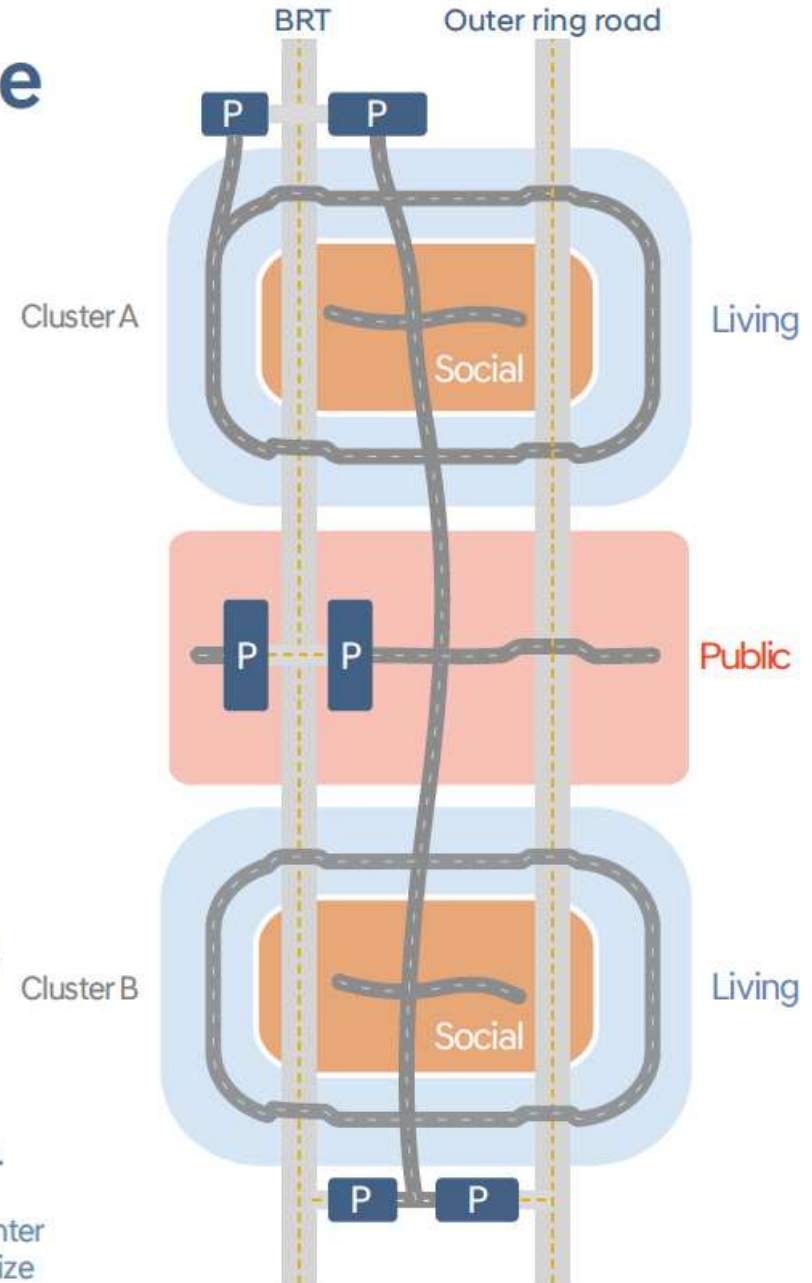
City without use zoning  
(mixed and variable use)



**Living:** Residence, office, small-scale neighborhood convenience facilities are mixed horizontally and vertically creating job-housing proximity and inducing easy access to convenience facilities.

**Social:** Kindergarten, park, small-scale concert hall, sports facilities, medium-scale neighborhood convenience facilities and others are gathered near Living providing community network experience.

**Public:** Schools, library, exhibition and concert hall, hospital, convention center and others are at the center of the Smart city enabling people to utilize public services of living from both sides.



# Sejong 5-1: Concept

01



## City which has a short driving hour thanks to autonomous driving and share-based transportation system

Provide pleasant and comfortable transit service with autonomous driving public transportation and share-based car service

Dramatic decrease of travel time with job-housing proximity city plan and artificial intelligence analysis of traffic data

02



## Health care city which provides customized medical services and emergency care rapidly

Build data-based customized medical services and artificial intelligence smart home

Build emergency support system which utilizes drones and IoT-based emergency care system

03



## Education centered city which expands creative and critical thinking to EduTech

Provide the education environment which respects variety of individuals focusing on discussion, descriptive essay and qualitative evaluation

Provide the education environment which utilizes various EduTech and equipment and follows a brain development cycle

04



## Energy independent eco-friendly city which has smart waste disposal facilities with the lowest emission of fine dust

Realize energy independence with the production of clean energy and exchange and customized distribution of energy

Build an eco-friendly city through fine dust monitoring, installment of air purifiers for city, electric public transportation and analysis/management of disposal

05



## Smart administrative city which reflects citizens' opinions rapidly

Strengthen representative democracy with the citizen committee, easy civil claims, immediate public opinion collection

Draw a reasonable solution by simulating city problems and various alternatives through digital twin of the virtual world

06



## Culture city which has cultural performances constantly by connecting performance teams and citizens in advance

Provide cultural performances that citizens want and smart payment/delivery/local currency services

Provide customized living services with lifestyle data analysis system and food/fashion/interior/vitalization smart tech

07



## Innovative city which has citizen participated experiments every day

Induce Korean/foreign start-ups/big companies to move in by building an environment which can utilize citizen data

Create an investment-friendly corporate environment and provide global services through operation of foreign demonstration cities



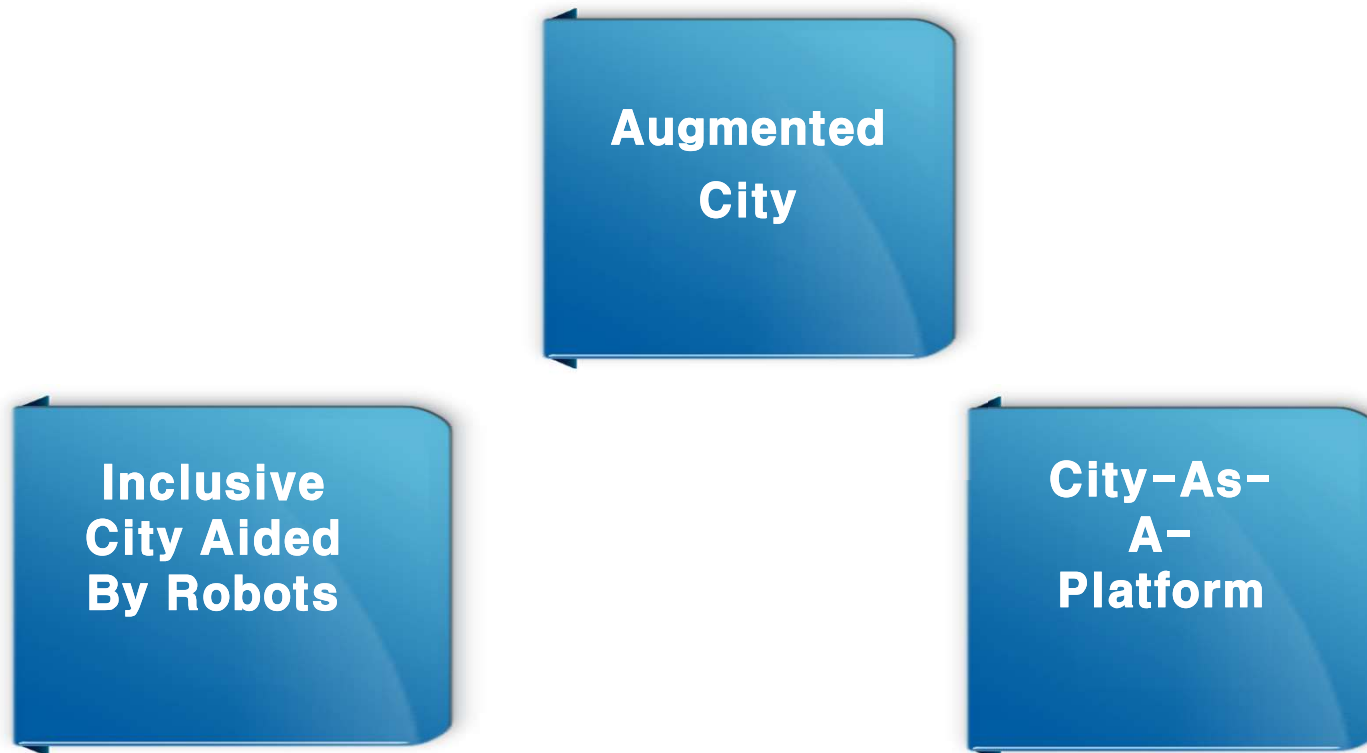
## **2. National Pilot City, Busan EDC**

---



## Value and Philosophy:

**A Global, Inclusive, and Innovative City that  
Harmonizes Nature, People, and Technology**



# Busan Eco Delta City: Concept



## (Eco Delta City)

A r e a	11.77km <sup>2</sup>
P o p u l a t i o n	75,100
M a i n F u n c t i o n	Residential, Commercial, R & D, Logistics, etc.
B u s i n e s s C o n d u c t o r s	Busan, K-water, Busan City Corporation



# Busan Eco Delta City: Concept

## Introduction of Innovative Technology

- Providing services that allow citizens to apply cutting-edge technologies to solve city problems and feel the benefits of the fourth industrial revolution.

Water and environment

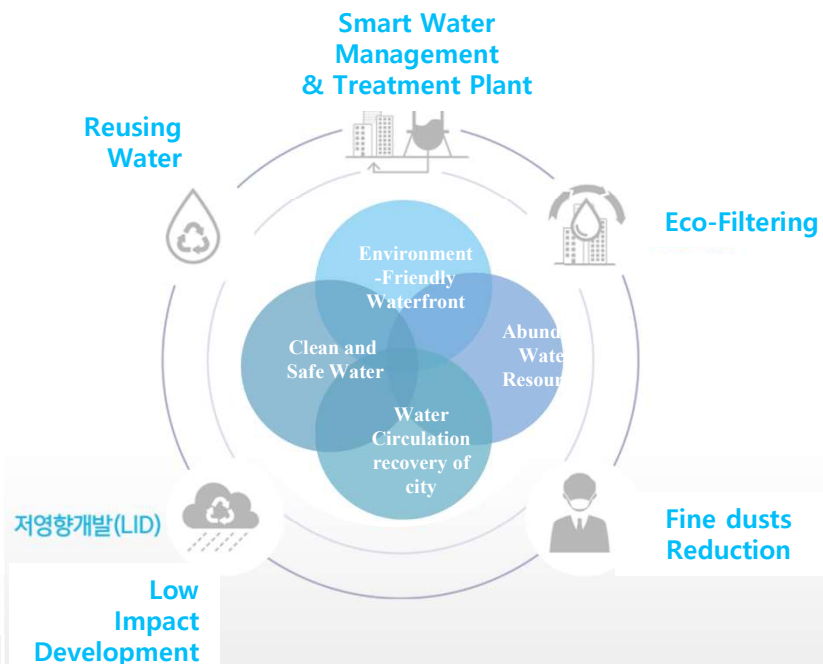
Energy

Transportation

Safety

Life & Culture

City without water purifier





# Busan Eco Delta City: Concept

## Introduction of Innovative Technology

- Providing services that allow citizens to apply high-technologies to solve city problems and feel the benefits of the fourth industrial revolution.

Water and environment

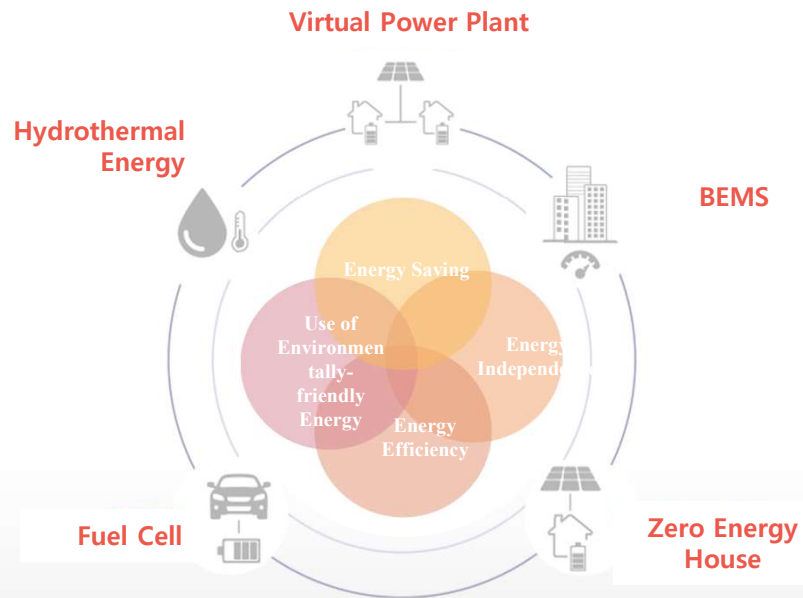
Energy

Transportation

Safety

Life & Culture

### Energy Zero City



# Busan Eco Delta City: Concept

## Introduction of Innovative Technology

- Providing services that allow citizens to apply high-technologies to solve city problems and feel the benefits of the fourth industrial revolution.

Water and environment

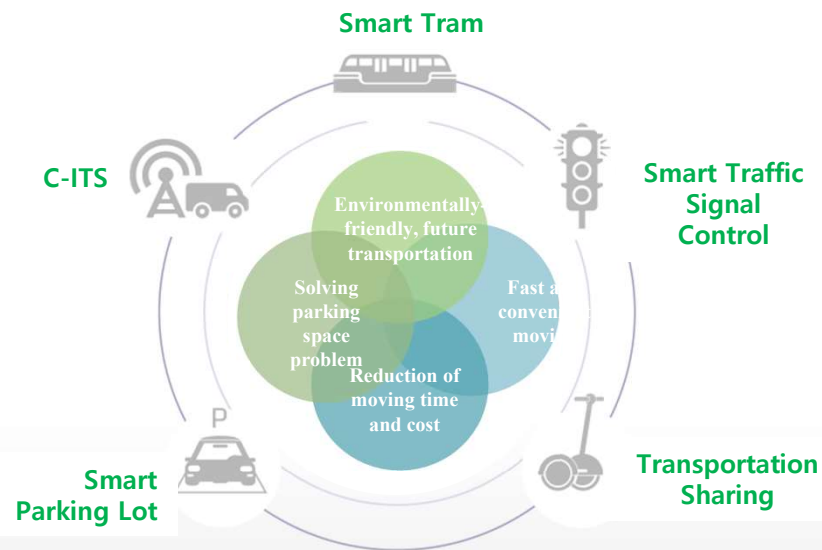
Energy

Transportation

Safety

Life & Culture

Cities without traffic and parking





# Busan Eco Delta City: Concept

## Introduction of Innovative Technology

- Providing services that enable citizens to solve the problems of existing cities through the application of innovative and high-tech technology and directly experience the benefits of the fourth industrial revolution technology

Water and environment

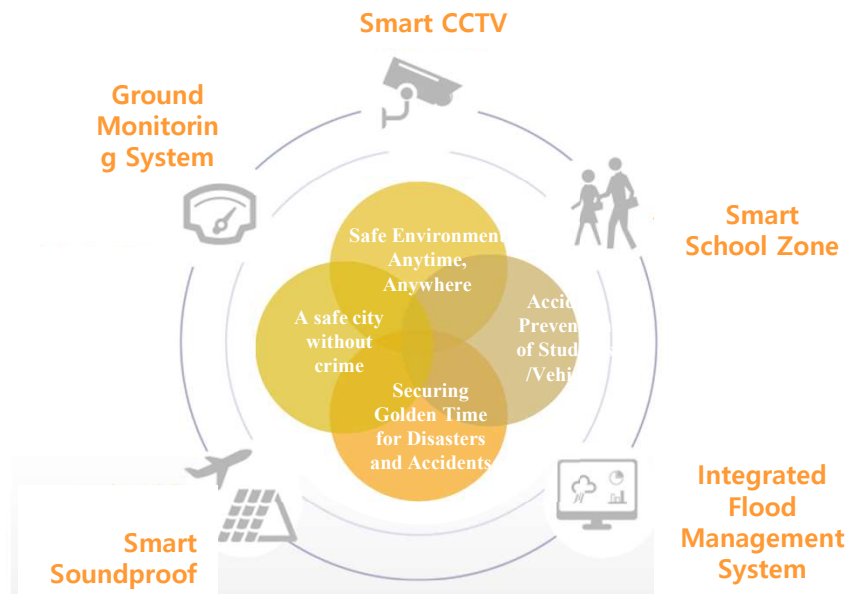
Energy

Transportation

Safety

Life & Culture

City safe from disasters and crimes





# Busan Eco Delta City: Concept

## Introduction of Innovative Technology

- Providing services that allow citizens to apply high-technologies to solve city problems and feel the benefits of the fourth industrial revolution.

Water and environment

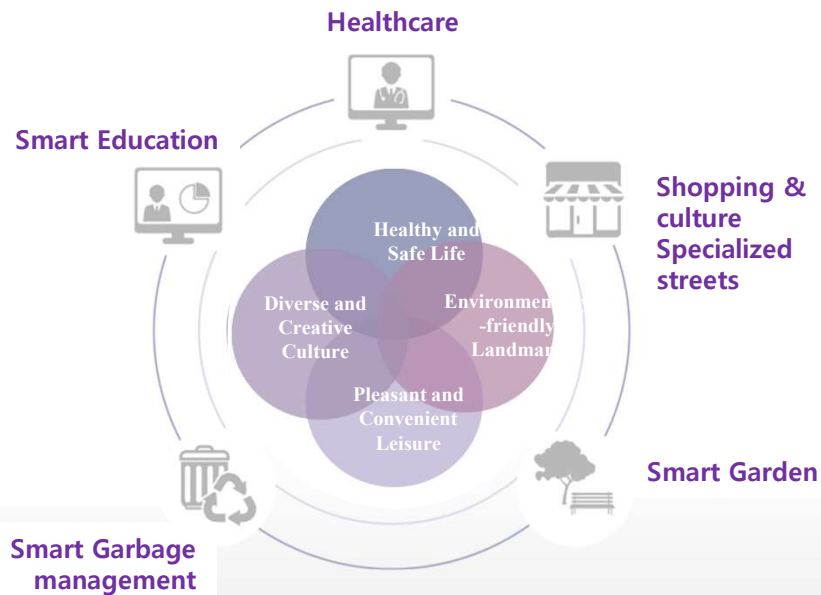
Energy

Transportation

Safety

Life & Culture

A city that is livable and enjoyable



**3:**

**And Plugging Gaps**

**As We Know Better**

**While Still Running Full-Speed**



# The “Gaps of the Plan” Discovered, Pretty Early

- “Why Are We Doing This, Again?”
  - Values still weak and unconvincingly local → little inspiration
- Tired, Old, Top-Down Approach with Little Citizen Participation
- Typical, “Do-It-Ourselves” Approach with Little Global Cooperation
- “Again, Why Are We Doing This?”



# Working on the “Global” gap now...

- Created Budget and Process for In-bound / Co-funded “Global Partnered Innovation” in the Two National Pilot Cities (2018.10~)
- Exploring Select “Strategic Partnerships” at National (G2G), Municipal (M2M), Institutional (I2I), and Business (B2B) levels
- Some current partners:
  - Netherlands (Water Energy), Denmark (Clean Tech, Biogas)
  - Welcoming participation from More Countries, Cities, Institutes and Businesses

# Rethinking “Smartness” of our Smart Cities

- Energy sources and infra for the Future Cities will have to be changed.
- Changing CO2-happy energy infra to CO2-less alternatives is essential
- Learn from and work with the leaders who are changing their nations and cities to become carbon-net-zero (e.g. Denmark with wind and renewable gas, Netherlands with aqua-thermal direct heating/cooling)
- IoT can and should play useful roles to help all of the above, and more.



**4:**

**Lastly, Why “Should” We Be  
Doing This?**



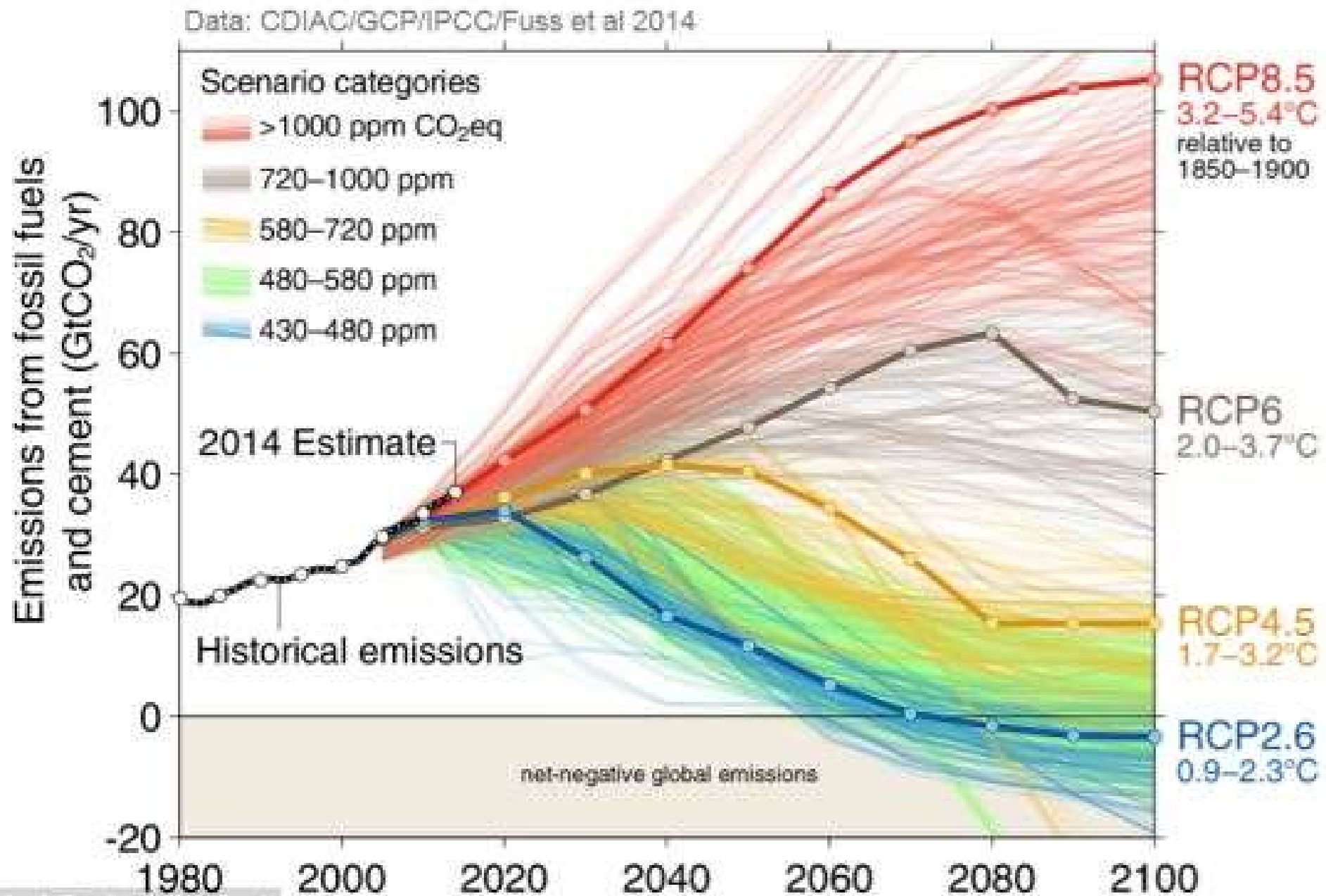
# Can't Go On Like This Any More: **70% of World's CO<sub>2</sub> from Cities**



## **CITIES PRODUCE 70% OF ALL FOSSIL-FUEL CO<sub>2</sub> EMISSIONS**

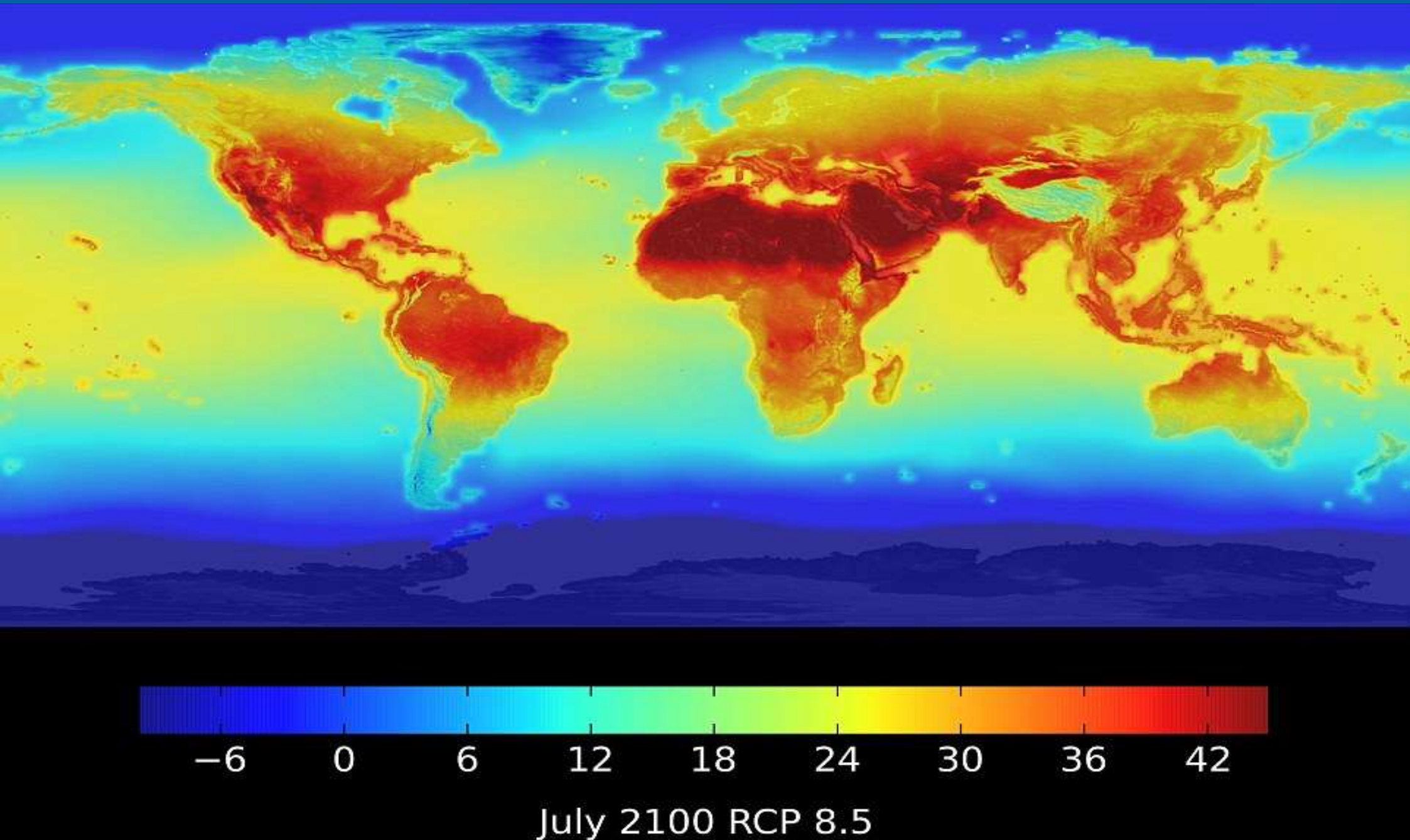
A 10-km-resolution map indicates the distribution and intensity of fossil fuel CO<sub>2</sub> emission sources. The regions with greatest emission intensity are indicated by red and black (urbanized areas and associated large power plants). The black circles indicate a vision for future surface measurement networks concentrated within the 23 existing megacities. Blue circles indicate the 14 additional megacities projected to exist by 2025. The dashed rectangles indicate the fields of regard of three remote-sensing instruments that if hosted on geostationary satellites would offer sustained, wall-to-wall mapping of nearly every emission source. The satellite and surface network data, integrated with improved high-resolution emission estimates would provide a robust system for assessing and informing policies. Map: (EDGAR version 4.0) 2009.

# Still Increasing **Scarily, Massively, with More Cities to Come**





So That We Do Our Part To **Preserve Our Planet From Infernos**



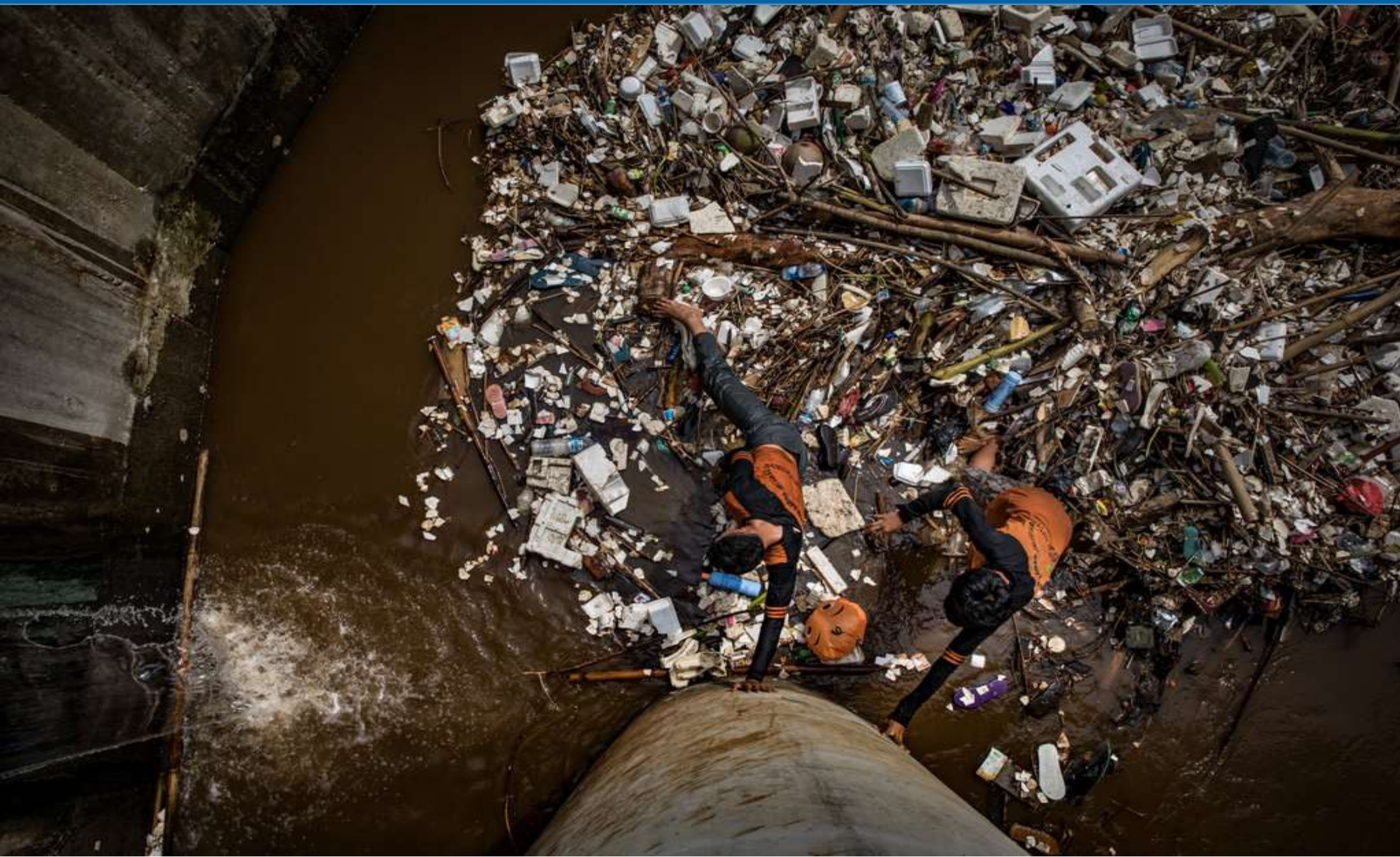


# And From Drowning Under The Massively Polluted Seas





## And From Drowning Under The Massively Polluted Seas



***“Will You Join Me?”***: Greta Thunberg, Davos, Jan 2019

A photograph of Greta Thunberg in Davos, Switzerland, in January 2019. She is wearing a blue and white striped knit hat and a matching scarf. She is looking slightly to the right with a serious expression. The background shows a stone building with a window and some snow on the ground.

Greta  
Thunberg's  
Message to Davos



**Thank you**