Trends in Smart Cities and Proposal for Japan-ASEAN Partnership
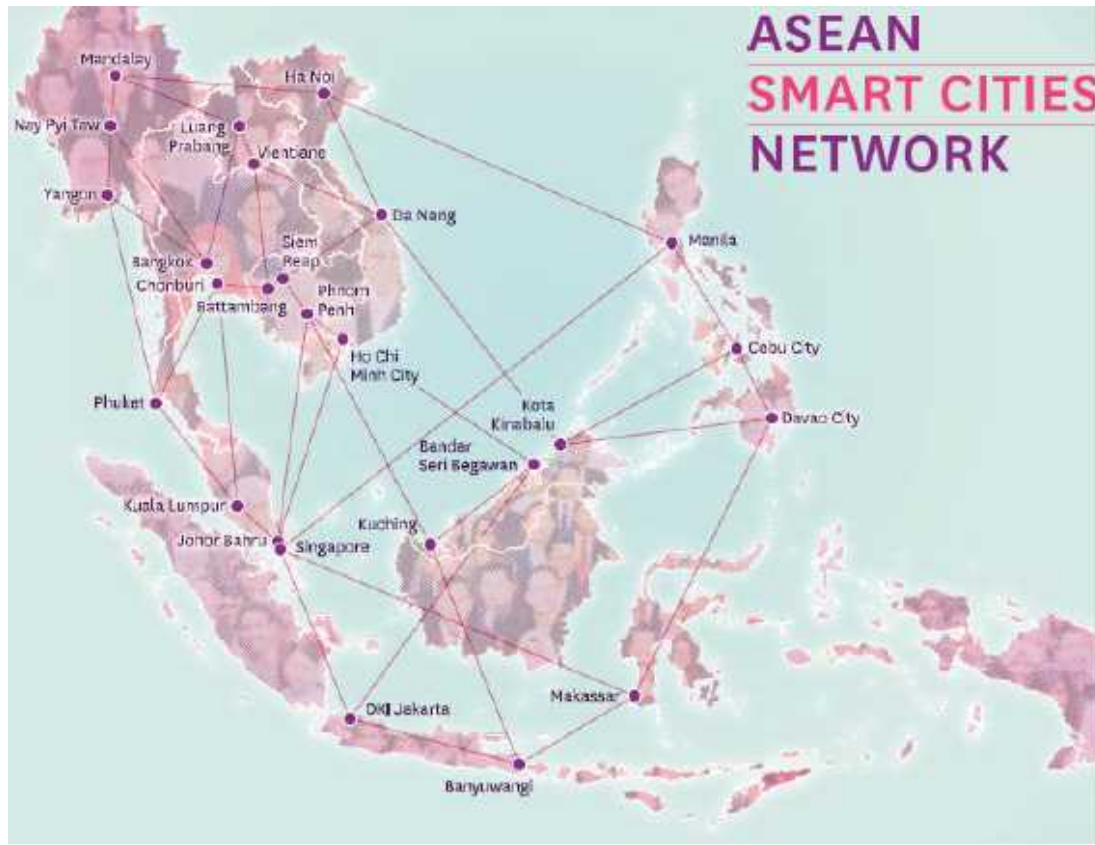
December 16th 2020

Special Advisor to the Prime Minister,

Dr. IZUMI Hiroto

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1. History of Urban Development and Trends in Smart Cities

Urban Development in Japan

	1960～ High economic growth period	**1980 ～** Stable growth period	**2000 ～** Maturity
Issue	• Shortage of housing due to population concentration in urban areas • Infrastructure (electricity, water etc.) shortage due to rapid urbanization • Environmental problems and pollution such as air and water pollution	• Dealing with high quality living environment needs that come with improved living standards • Worsening of traffic congestion with progress of motorization • Underutilized and unused land due to change of industrial structure • Increased environmental awareness	• Dealing with low environmental burden town planning needs • Decreasing vitality in urban centers due to falling birthrates, ageing society, and decreasing population • Utilizing progressively deteriorating housing stock
Solution	1. Decentralize urban functions through new town development in coordination with traffic infrastructure 2. Mass supply of housing (provision of new urban areas) 3. Legislation in order to realize urban policy	4. Improved housing performance standards 5. Expansion of traffic infrastructure networks 6. Maintenance of existing urban areas 7. Resource circulation efforts	8. Compact City Plus Network town planning 9. Stock regeneration 10. Landscape protection **11. Realization of Smart Cities**

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What are Smart Cities?

Optimization of individual fields

security, disaster prevention
politics
markets
mobility
energy
lifestyle
medical
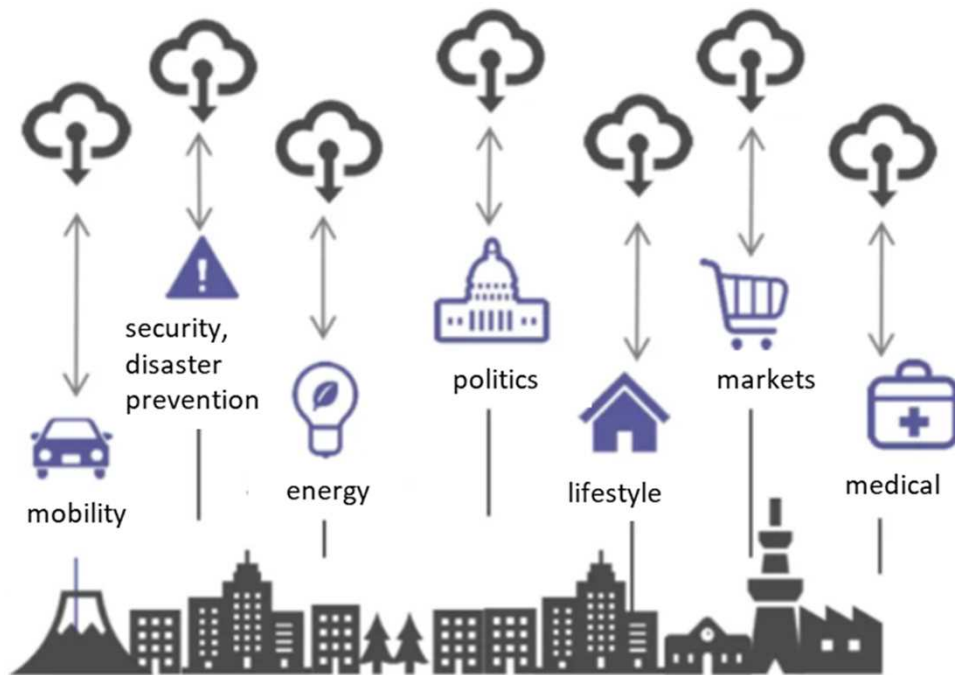
Cross sectoral overall optimization

security, disaster prevention
politics
markets
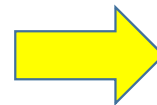mobility
energy
lifestyle
medical
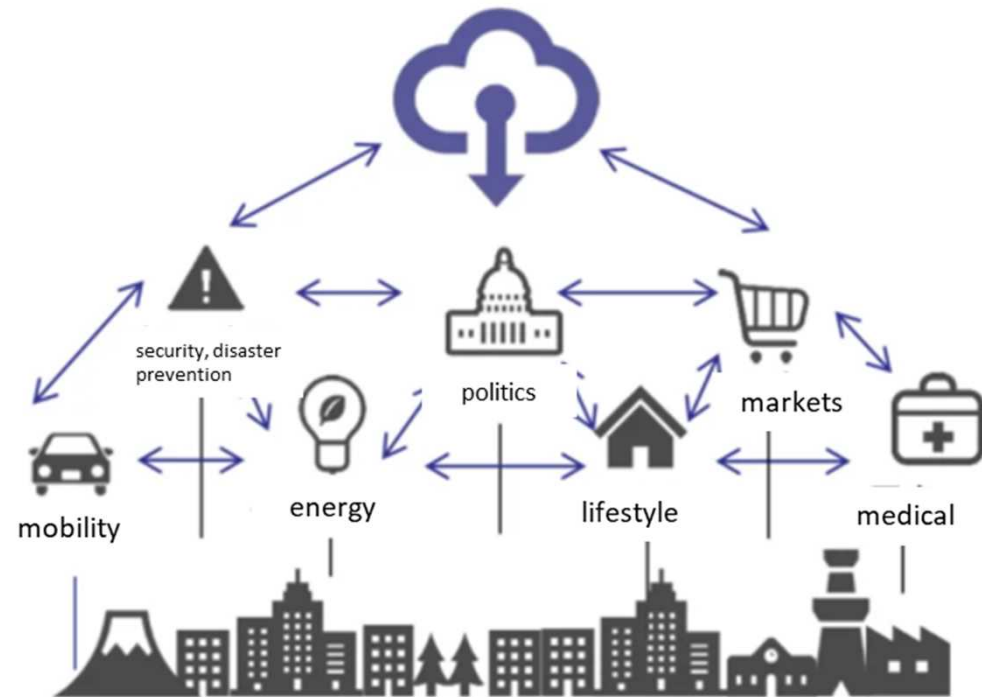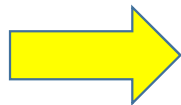
Data Acquistion → Data Use → Data Accumulation / Integration / Analysis

Smart City Promotion Structure / Activities

- In August 2019, in order to accelerate smart city activities with cooperation between the public and private sectors ''Smart City Public-Private Partnership Platform' was established by ministries and agencies concerned with smart cities joined with local governments, private enterprises in order to accelerate smart city initiatives through a joint public-private approach, make basepoints in each area and educate human resources.

200 projects in approx. **160** regions currently under demonstration / implementation
(⬤ 38 MaaS projects)

Kakogawa City（Hyogo Pref.）

Security Camera (creating a safe and secure city using ICT)

Opening up information on community bus location and bus stops, etc. by using a data linkage platform

Aizuwakamatsu City (Fukushima Pref.)

Household televisions (view city government or local information or reserve buses on-demand)

Display recommendations of information thought necessary based on personal attributes

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World Smart Cities

- Implementation progressing rapidly around the world
- Solutions provided through **collection, coordination and use of urban data.** However, there is a fear of data and urban OS enclosure
- **Mobility（MaaS, autonomous driving etc.）** will take on important functions, roles

	Content
USA **Las Vegas**	• Activities progressing in the fields of traffic and transportation, energy, housing, efficient water use, and administrative efficiency etc. Dept. of Transportation rolled out the「Smart City Challenge」for middle-sized cities in 2015 • GAFA also deploys data collection and analytical capacity as a weapon in overseas operations, but in recent years there have been cases related to data privacy becoming problematic
EU **Copenhagen** **Helsinki**	• Data is collected by sensors in the town and used for traffic and waste management • Reservation and payment mobility service(MaaS) for public transport, taxis, motorbikes, rental cars etc. through Whim
Netherlands **Amsterdam**	• Installation of smart meters in ordinary homes and visualization of energy usage • Publish open data maps containing various information such as energy usage in each area and urban infrastructure situation
UAE Dubai	• e-Government that can be accessed 24 hours a day, 365 days a year • Various payments using blockchain technology • Tracking using autonomous police cars and drones

Smart cities centered around data coordination and mobility are being developed around the world

- Recommended for establishment at the 2019 G20 Digital and Trade Ministers' Meeting. An establishment meeting was held in Yokohama in October 2019.
- Collaborate with local governments, world leaders and start-ups, research institutes, and civil society communities.
- Discussions centered on the "five principles" toward "realizing technology governance" and "eliminating governance gaps between cities."

G20 Global Smart Cities Alliance

[Five principles in smart cities]

Safety, security & | Transparency & Privacy | Interoperability & openness | Equity, inclusion & societal impact | Operational & financial sustainability

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Activities in Developed Nations

➢ Nippon Telegraph and Telephone Corporation（NTT），in a joint venture with Las Vegas, has introduced superior public safety solutions into onsite situational awareness
➢ NTT has signed an MOU with Nevada and Las Vegas, and agreed on the following points
・Further create usage cases in traffic, parks and curb monitoring etc.
・Further expansion in other cities in Nevada, other states, and globally

Situational Awareness

Public Safety Solution

Camera/Microphone

Street, Event, Stadium

Reactive

Recognition

Flexible ICT

City DC

Proactive

• Crowd Counting
• Wrong Direction Vehicle Movement
• Vehicle and/or Person of Interest

Next Step

MOU Signed

Nevada   Las Vegas   NTT

Additional Use cases
• Smart Traffic
• Smart Park
• Curb Monitoring

Evolution
Be Better

Area Expansion
• Other Cities in Nevada
• Other States and Global

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Support Measures and Structure of Smart City Overseas Expansion

44th Meeting on Strategy relating Infrastructure Export and Economic Cooperation (October 7, 2019) : Urban Development（Smart Cities）

Promotion of following measures to accelerate overseas expansion :

① Through construction of Platforms etc., strengthening cross sectoral responsiveness and utilizing domestic activity results

② Strengthen involvement from the concept stage and introduce appropriate equipment and systems to accommodate needs

③ Strengthen mutual complementary relations through international cooperation

④ Ensure feasibilty

⑤ Data sharing related activities

Smart City Catalogue

A collection (catalogue) of urban development achievements of smart cities in Japan, incorporating technology such as IoT, AI, and big data, was published in October this year.

Japan's Smart Cities～ Solving Global Issues such as SDGs with Japan's Society 5.0 ～

3 pillars characteristic of Japan

①Eco-Cities (environmentally symbiotic cities)

②TOD （Transit-Oriented Development)

③Building Disaster-Resilient Cities （Resilient Cities)

Issues and Solutions

① Realize the world's highest level of a safe and secure society (eg: crime prevention, disaster prevention, traffic accident reduction etc.)

② Demonstrate maximum ability of traffic and logistics infrastructure (eg: MaaS, autonomous driving, car-sharing etc.)

③ Realize efficient energy use and zero emissions

④ Become the world's highest level recycling society

⑤ World-shaking infection control measures and public health

⑥ Expand access to education and improved education quality (distance / online learning)

⑦ Utilize tourism resources to attract people from around the world

⑧ Dependable infrastructure asset management and extending life

⑨ Safe and high quality agricultural production and distribution infrastructure

Smart City Catalogue URL

Main report : https://www.kantei.go.jp/jp/singi/keikyou/pdf/Japan's_Smart_Cities-1(Main_Report).pdf

Cases and examples : https://www.kantei.go.jp/jp/singi/keikyou/pdf/Japan's_Smart_Cities-2(Cases_and_Examples).pdf

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Examples of Japanese Urban Infrastructure Development in ASEAN

Cities from ASCN

Thailand - EEC（Eastern Economic Corridor）AMATA Chonburi Smart City Development Project

Chonburi Smart City master plan drawing

Thailand - Urban Development Project around Bang Sue Station（TOD）

Image of urban development around Bang Sue Station

Vietnam - Smart City Development in Northern Hanoi

Image drawing of completed first
（※First stage is in the red dotted area）

Vietnam - Complex Urban Devlopment in Binh Duong Province

Becamax Tokyu

Tokyu bus
（Uses ICT technology, low environmental impact）

Indonesia – Delta Mas City

Completed image drawing of Delta Mas City

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Cooperation toward ASEAN Smart City Network

Hosting of Japan-ASEAN Smart City Network High Level Meeting

Date ： October 8-11, 2019
（Oct. 8〜9:ASCN、Oct. 8〜10:ASCC、Oct. 9:GSCA、Oct. 11:ASCN・ASCC joint inspection tour）
Venue ： Yokohama, Japan
Participants: 2 day total approx. 800
Content : Opening/Closing ceremonies, plenary meeting, theme-based meetings,
public-private sessions, infrastructure inspection tour etc.

【Summary Record extract】

●The Meeting noted Japan's proposal for an extensive analysis of the challenges, needs and targets of the cities, and subsequent study of comprehensive solutions and measures as a first step of the cooperation.
●ASEAN and Japan affirmed continued cooperation with each other in realizing smart cities in ASEAN, such as through the possible convening of another ASEAN-Japan Smart Cities Network High-level Meeting in the future as mutually agreed.

※List of 10 countries and 26 cities participating in ASEAN Smart City Network (ASCN)

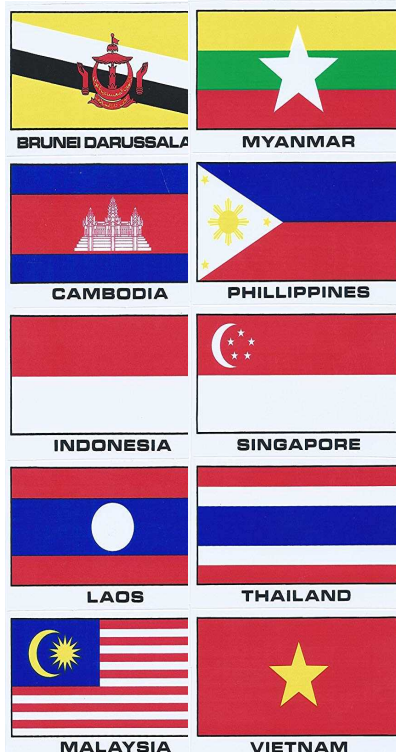| ASEAN countries and participating cities（10 countries, 26 cities）				
Indonesia （Jakarta, Banjuwangi, Makassar）	Cambodia （Phnom Penh, Battambang, Siem Reap）	Singapore	Thailand （Bangkok, Chonburi, Phuket）	Philippines （Manila, Cebu, Davao）
Brunei （Bandar Seri Beguwan）	Vietnam （Ho Chi Minh City, Danang, Hanoi）	Malaysia （Kuaka Lumpur, Kuching, Johor Bahru, Kota Kinabalu）	Myanmar （Yangon, Mandalay, Naypyidaw）	Laos （Vientiane, Luang Prabang）

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Japan Association for Smart Cities in ASEAN（JASCA）

Established on October 2nd, 2019

【**Missions**】
- ✓ **Project Incubator** to promote Smart City Projects in ASEAN
- ✓ **Communication Hub** to enhance Public-Private Actions for Partnership
- ✓ **Total Solution Coordinator** for cross-cutting and comprehensive solutions provided by members of JASCA
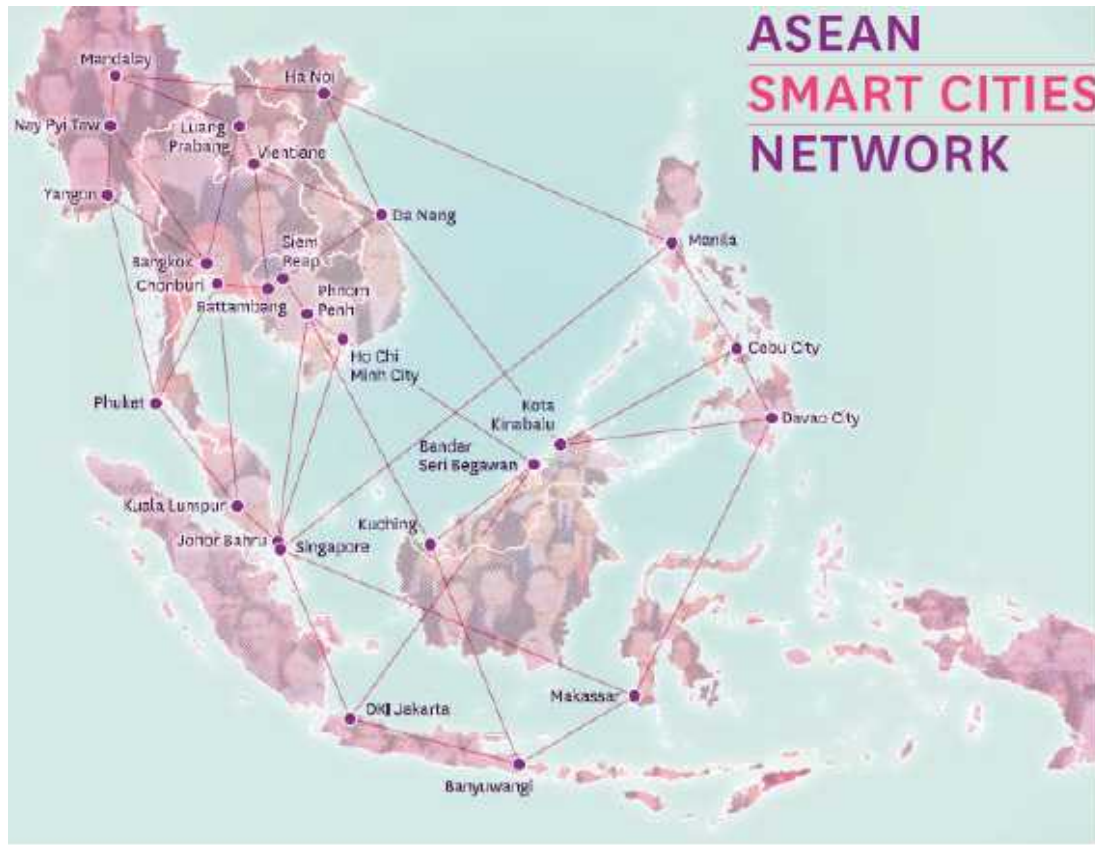
Organization / Members (as of Nov, 2020)

BRUNEI DARUSSALAM　MYANMAR

CAMBODIA　PHILLIPPINES

INDONESIA　SINGAPORE

LAOS　THAILAND

MALAYSIA　VIETNAM

- ● Information exchange
- ● Promotion
- ● Business Support
- ● Meetings
- ● Matching

JASCA

Ministries (7)

内閣官房 Cabi　内閣府 Cabinet Office　総務省 Ministry of Internal Affairs and Communications　外務省 Ministry of Foreign Affairs of JAPAN

MLIT　経済産業省 Ministry of Economy, Trade and Industry　環境省 Ministry of the Environment

Cities (9)

OPEN YOKOHAMA Yokohama　Toyama　Utsunomiya　Fujieda　Saitama　Takamatsu　Masuda　Kitakyushu　Chiyoda

Public Sectors (16)

JICA　JOIN　JBIC　NEXI Nippon Export and Investment Insurance　UR　JICT

etc.

Private Companies (242)

Manufacturers, System Integrators, Developers, Civil Contractors, Service Providers, Consultants, Banks etc.

Cooperative Organizations (5)

Smart City Public-Private Partnership Platform
JIPAD, JBP, SCI-J, JASE-W

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2. Proposal for Japan-ASEAN Partnership

Cooperative Measures on Overseas Smart City Development 1

> **Implementation of concrete smart city project formation**

◆ Implement a study in order to accelerate a concrete smart city project formation targeting the 10 countries and 26 cities that make up ASCN

<Study target fields>

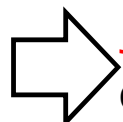> IoT, AI, big data and robotics used to contribute to improvements and sophistication in urban

【Main examples】
- Transportation services（MaaS etc.）
- Crime prevention / disaster prevention
- Energy
- Administration（including those that conduct housing services, public facility management, data collection, analysis, control and management）

<Study / implementation content>
- Master Plan（M/P）
- Feasibility Study（F/S）
- Human resource training plan
- Demonstration projects etc.

> Studies toward the introduction of 5G, local 5G technology (including demonstration-related Studies)
> Includes studies related to decarbonization transition targeted at carbon-neutral promotion

⇨ Japanese companies will conduct the studies based on the public call for plan proposals for the survey targeting ASCN participating

Cooperative Measures on
Overseas Smart City Development 2

➤ **Promotion of financial support for ASEAN smart city proposals**

➢ Loans utilizing the Japan Bank for International Cooperation (JBIC) Growth Investment Facility loans etc. (¥200 billion scale)

➢ Japan Overseas Infrastructure Investment Corporation for Transport & Urban Development (JOIN) investment etc. (¥50 billion scale)
  ・In addition to the conventional transport and urban development project, JOIN will actively

  invest in areas such as energy, water and facilities on communication, waste, collecting

  and researching data, etc.

➡ Total of ¥250 billion

➢ Consider utilize ODA etc. in regards to highly public projects for the purpose of the development of the counties

Cooperative Measures on Overseas Smart City Development 3

> **Strengthening support for smart city in ASEAN countries**

- Utilize contact points for supporting Japanese private companies in Japanese Embassies and Consulate General

- Gather information on smart city, strengthen the relation between relating organizations in each country and support business of private companies etc.

> **Smooth information sharing and mutual cooperation through JASCA website**

- Establish a JASCA website and publicize information such as introduction of best practice Japanese smart cities, links to member companies and response to inquiries etc.

- Create cooperative relationships between ASEAN cities and Smart Cities in Japan through Smart City Public-Private Partnership

Smart City supported by Japan ASEAN Mutual Partnership (Smart JAMP)

> **Implementation of concrete smart city project formation**
> **Promotion of financial support for ASEAN smart city proposals**
> **Strengthening support for smart city in ASEAN countries**
> **Smooth information sharing and mutual cooperation through JASCA homepage**

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3. Infrastructure System Overseas Development Strategy 2025

Infrastructure System Overseas Development Strategy 2025

Ⅰ．Past results and formulation of a new strategy

◆Promotion of unified public-private activities in the 7 years from 2013.

◆2018 order volume reached ¥25 trillion, an uptrend toward the goal of 「about ¥30 trillion in 2020」. However, we need to keep in mind the effect of the current COVID-19 pandemic.

◆Based on changing situations in recent years, formulate a new strategy with new goals for the 5 years from 2021.

Ⅱ．New strategy goals and target outcomes

Situation changes since formulation of the current strategy (2013)

- Intensification in competition with companies from emerging nations
- Spread of SDGs way of thinking (2015 UN)
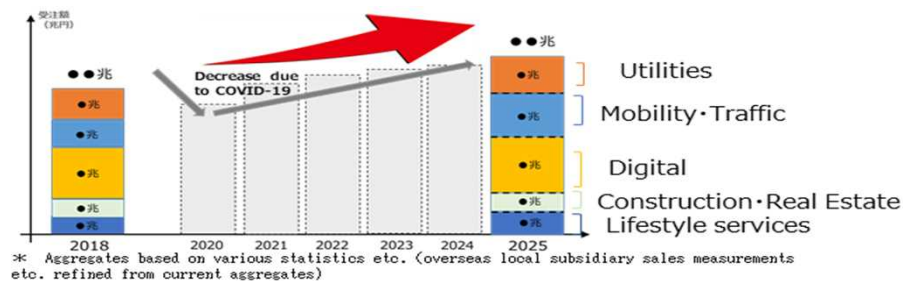- Complications in international affairs (Indo-Pacific region face various changes)

Goal；From the single goal of 「realizing economic growth」 to setting up 3 pillars

1. Realize economic growth through dealing with a transformation to a carbon-neutral and digital society
2. Contribute to social issue solutions and achieving SDGs in countries slated for projects
3. Realize a 「free and open Indo-Pacific」(FOIP)

Goal；Set up KPI

- Set a new 「about ¥34 trillion」 as a goal for order volume of infrastructure systems in 2025.
- Conduct revisions during the period where necessary based on the impact on the global economy from COVID-19.

受注額
(兆円)

●●兆

Decrease due to COVID-19

●●兆

●兆 Utilities
●兆 Mobility・Traffic
●兆 Digital
●兆 Construction・Real Estate
●兆 Lifestyle services

2018 2020 2021 2022 2023 2024 2025

＊ Aggregates based on various statistics etc. (overseas local subsidiary sales measurements etc. refined from current aggregates)

- As well as establishing trade promotion (goal: 10+cases for the year) by the Prime Minister, consider a new KPI framework as a strategy execution monitoring .

Ⅲ．Pillars of policy
（Reconstructed from the current 4 pillars to 8 pillars）

1．Dealing with important current issues

① Concentrated promotion of COVID-19 response

② Contribute to a carbon-neutral society

③ Promotion of digital technology and data usage

2．Dealing with diversification of goals

④ Securing core technology

⑤ Promote high quality infrastructure and local collaboration

⑥ Improve economic prosperity and connectivity of regions where projects are deployed

3．Dealing with diversification of methods

⑦ Continued involvement after selling all stock

⑧ Cooperation with foreign governments and organizations in third countries

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G20 Principles for Quality Infrastructure Investment

① Maximizing the positive impact of infrastructure to achieve sustainable growth and development

② Raising Economic Efficiency in View of Life-Cycle Cost

③ Integrating Environmental Considerations in Infrastructure Investments

④ Building Resilience against Natural Disasters and Other Risks

⑤ Integrating Social Considerations in Infrastructure Investment

⑥ Strengthening Infrastructure Governance

Japan's Advantage:Development of 'Quality Infrastructure Systems'

Lifestyle Costs

Easy to use and long-lasting, including from initial investment to maintenance, reducing lifestyle costs

Ex.：Thailand, Purple Line
（Municipal railway）

・Introduced lightweight and energy efficient Japanese stainless steel railcars, and concluded a long-term maintenance contract (10 years)
・Constructed a transport system, including maintenance, using Japanese technological strength, contributing reduced lifestyle costs

Human Resource Development &Technology Transfer

In conjunction with laying the foundations for development of the other country, conduct technology transfer and nurturing of local human resources and companies etc.

Ex.：Vietnam, Nhat Tan Bridge

・One of the world's largest cable-stay bridges, construction was conducted with a Japanese joint venture through yen loans
・Contributed to local human resource training through technology transfer such as instruction from skilled Japanese engineers（※） and maintenance managers
　※ reinforced concrete, construction workers, plasterers etc.

Certainty

Definite fulfillment of contract items such as construction periods

Ex.：Cambodia, Tsubasa Bridge
（Neak Loeung Bridge）

・A bridge crossing the Mekong River on the international arterial route linking Ho Chi Minh City (Vietnam), Phnom Penh (Cambodia), and Bangkok (Thailand)
・Using advanced technology, construction was completed within the construction period

Technological Strength

Taking into consideration the environment, natural disasters and safety aspects, fully introduce technology backed up with experience

Ex.：Myanmar, Thilawa Port

・Based on requests from the other country, Japanese technology (jacket construction method), which can contribute to rapid construction and early service, was employed
・Taking disaster prevention into consideration, high earthquake resistance and back up power supply was secured for quays and cargo handling equipment

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In addition to 'Smart City supported by Japan ASEAN Mutual Partnership' measure, Japan will continue working with concerned ministries and agencies, concerned organizations, private enterprises, and local governments to actively promote smart cities in ASEAN.

Thank you

Terima kasih banyak

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ຂອບໃຈຫຼາຍໆ

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Maraming salamat po

ขอบคุณครับ

Cảm ơn rất nhiều

ありがとうございました。