

Development of digital infrastructure in Japan

SAKAI Kosuke

Second Secretary,
Embassy of Japan in Peru

■ Digital implementation to solve local issues

Local 5G implementation

Proof of Concept for the realization of problem-solving local 5G, etc.

- ✓ Contribution to the revitalization of local communities through digital implementation based on the each local community's needs.
- ✓ Conducting Proof of Concept to develop technical standards for operation and local 5G solutions.

■ Development of Digital Infrastructure

Universalization of optical fiber service

Project to promote the development of an advanced wireless environment

- ✓ Collaboration with local governments and telecommunications carriers in deployment of optical fibers
- ✓ Subsidies for the construction of optical fibers to the entrance of radio stations in disadvantaged areas.
- * Other efforts include extending the duration of 5G tax incentives (FY2022 tax reform)

■ Efforts to ensure that no one is left behind

Support to encourage digital utilization

Project to promote the digital utilization

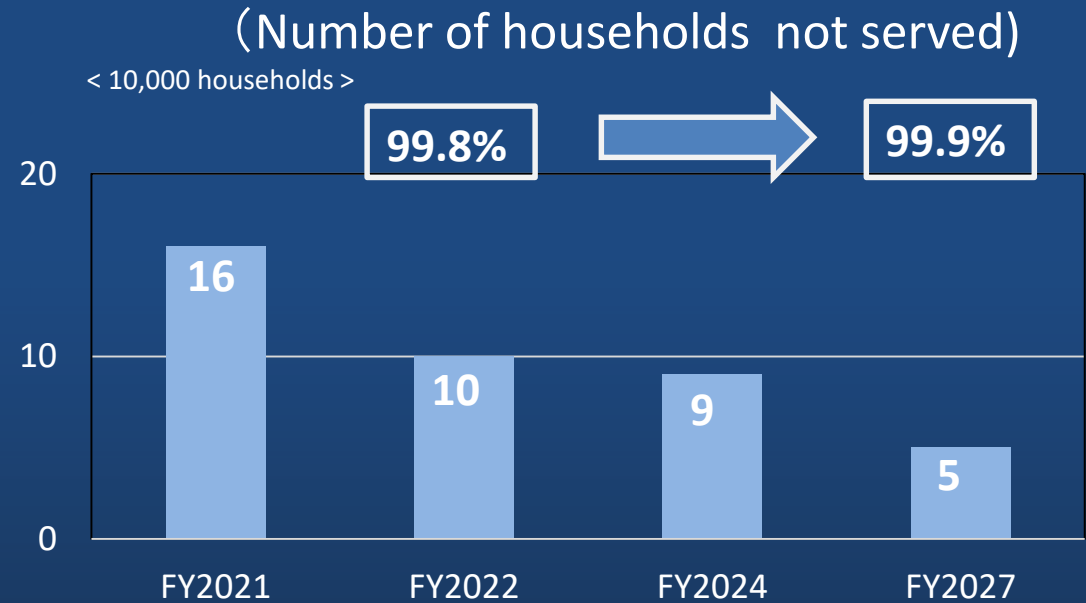
- ✓ Roll out of workshops for the elderly to give advice and consultation for how to use governmental online services, in order to mitigate the elderly's anxiety about such services.

① Goal of deploying optical fiber

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Deployment target

By the end of FY2027,
99.9% household coverage



Policy measures

- ① In disadvantageous areas, MIC supports the deployment of optical fiber.
- ② In unprofitable areas, maintenance and management costs will be supported by Universal Service Subsidies.

② Goal of deploying 5G

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Deployment target

Step 1 Infrastructure deployment

Step 2 Local deployment

5G population coverage: Over 30% at the end of FY2020

FY2023

- **95%** of the nation
(280,000 stations in total)
- 5G base stations in all cities, towns, and villages

FY2025

- **97%** of the nation
(300,000 stations in total)

FY2030

- **99%** of the nation
(600,000 stations in total)

Policy measures

- ① Allocation of new 5G frequencies
- ② Revision of technical standards to enable efficient area coverage
- ③ Support by subsidies
- ④ Tax exemption (← Safety and trustworthy, Openness etc.)
- ⑤ Promotion of infrastructure sharing

Development target

1) Datacenter

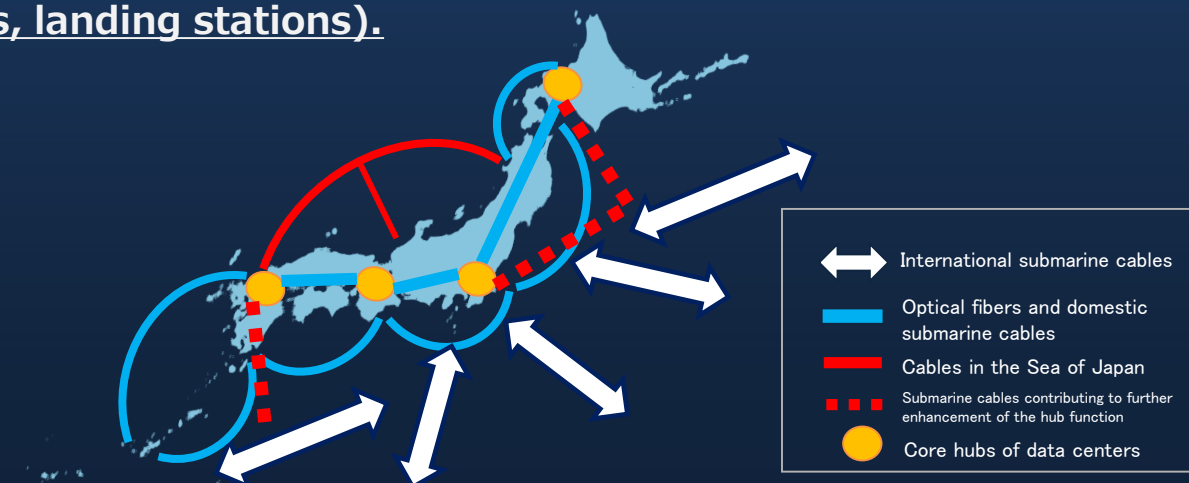
- The government of Japan plans that two ministries (MIC and METI) would join force and develop 10+ regional basis for data centers in five years. MIC supported the development of seven regional datacenters through a supplementary budget for FY2021.
- For the time being, the two ministries promote the consolidation of third and fourth core bases in areas of Hokkaido and Kyushu, which would complement and possibly substitute the role of existing basis of Tokyo and Osaka.
- The two ministries continue to study the future course of, and consider the necessary support for, the further decentralization of data centers. This would be done in corporation with relevant ministries and agencies, with close eyes on the greening initiatives, emergence of MEC (multiple-access edge computing) and other technology developments.

2) Submarine cable

- The construction of Japan Sea Loop Cable (Digital Garden City Superhighway) is planned to be completed in FY 2026, with local landing stations.
- Closely working with Hokkaido and Kyushu development - to help consolidate Japan's position as a safe, secure and reliable hub of the global data flow (e.g. branches, landing stations).

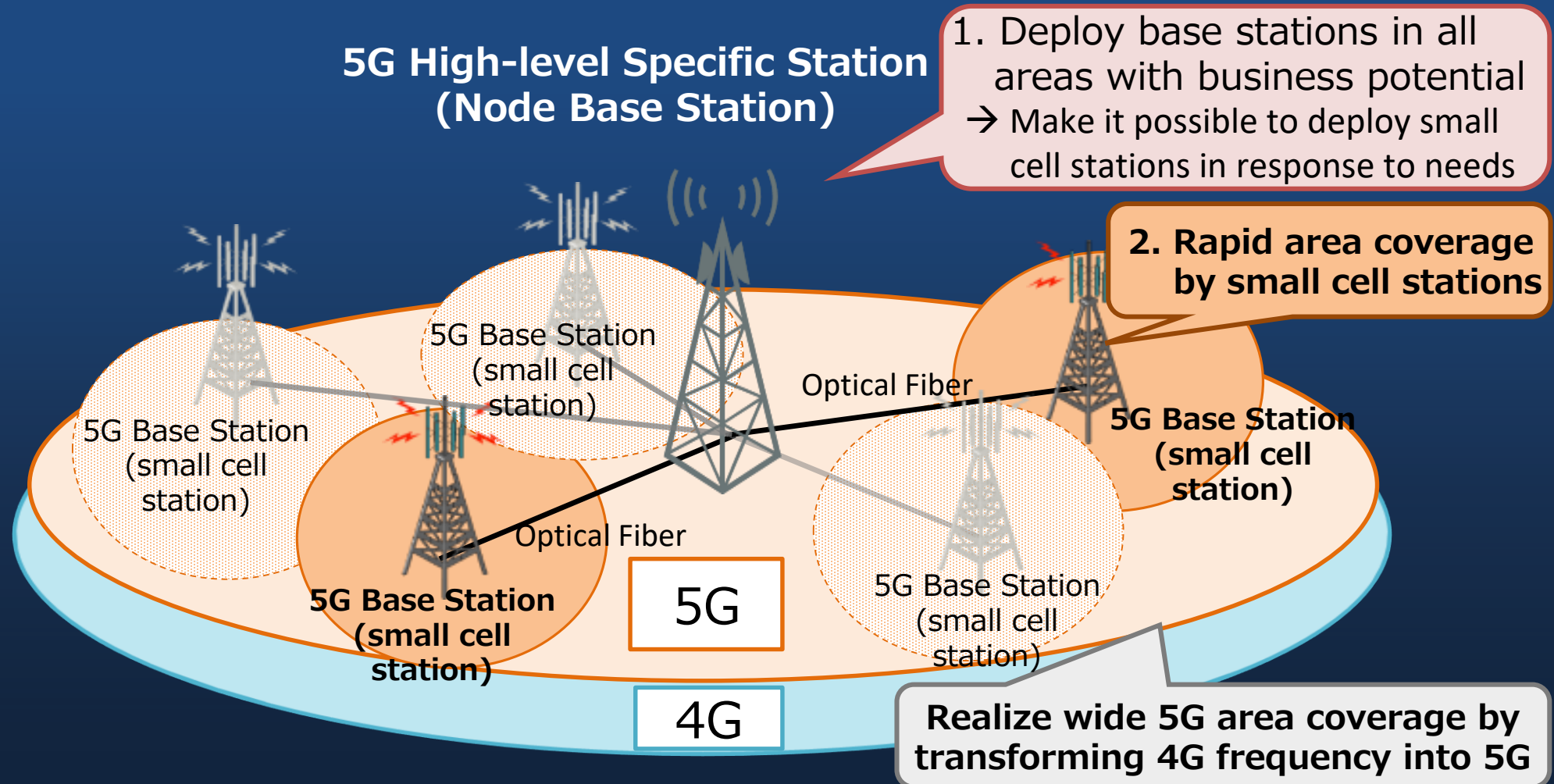
Specific measures

- Subsidized support
- Promoting multi-routing of international submarine cables.
- Promoting initiatives to safeguard international submarine cables and landing stations and enhance the installation and maintenance of submarine cables.



Realize the world's highest quality 5G environment by the two-stage strategy:

1. Nation-wide deployment of 5G foundation (4G and 5G node base stations)
2. Enhance nation-wide area coverage by local development of small cell stations



- In order to adjust to huge increase of telecommunications traffic, frequency allocations for 5G have been conducted to broaden the mobile phone bandwidth by three times.
- A frequency allocation of 2.3GHz was conducted in May 2022. At the same time, an indicator to evaluate installment of base station in less favored area was introduced.

Evaluation indexes on examination for a frequency allocation of 2.3GHz

1. Absolute examination

- | | |
|---|---|
| 1 Area expansion | 3 Economic value of the frequency |
| - Installment plan for all prefectures | - Fees of establishing specified base stations are more than 2.4 billion yen |
| 2 Equipment | 4 Others |
| - Securing place for installment, procurement of equipment, human resource procurement plan for installment | - No transferring business to existing operators. |
| - Plan for safety and reliability of equipment. | - Plan to keep mobile phone service in the case of radio switch off for the dynamic spectrum access |

2. Comparative examination

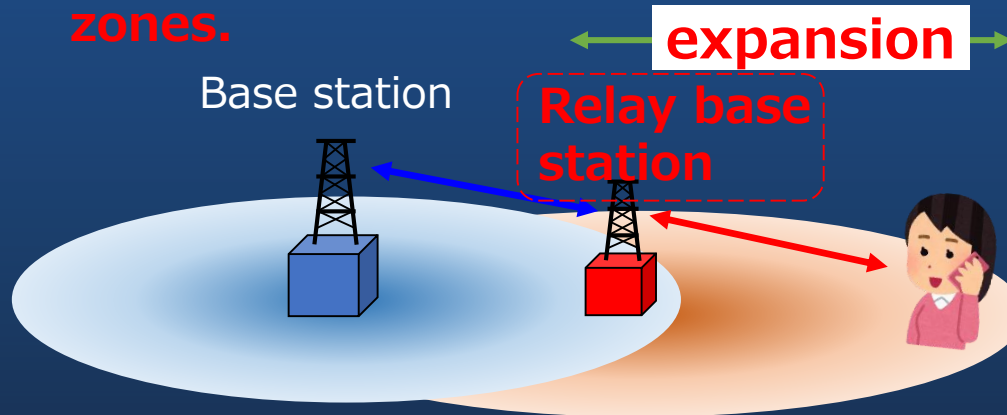
- | | |
|--|--|
| 1 Area expansion | 3 Economic value of the frequency |
| - The number of base station in whole Japan is larger than other operators. | - Fees of establishing specified base stations are higher than other operators'. |
| - <u>The number of base station in less favor areas is larger than other operators.</u> | 4 Technology |
| - <u>The number of 5G base station in 5G delayed area is larger than other operators.</u> | - Whether having development and installment of technologies such as switching bandwidth without stopping radio wave or not, and whether proposing international standards or not. |
| 2 Advancement | |
| - The ration of stand alone 5G specified base station is larger than other operators. | |

Allocate frequencies

- Discussing ①**5G relay base station**, ② **Femtocell base station/ Low power repeater**, ③**Development of system for high power user equipment**, in order to mobile communications area, and concluding the policy of development of system and take necessary actions in Q2 of 2024.

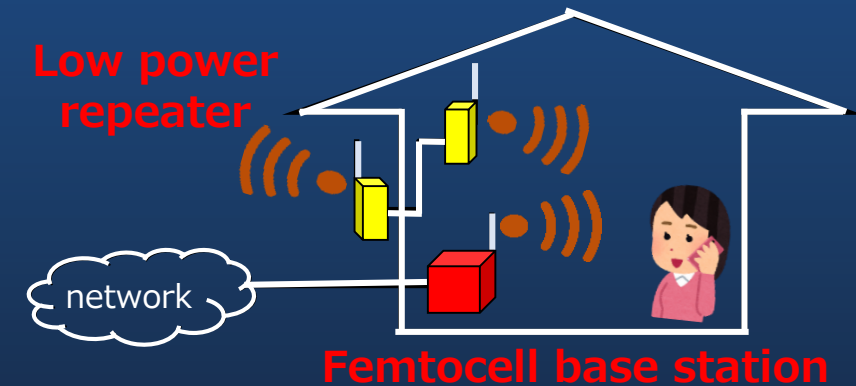
1 5G relay base station

Expanding 5G areas into blind zones.



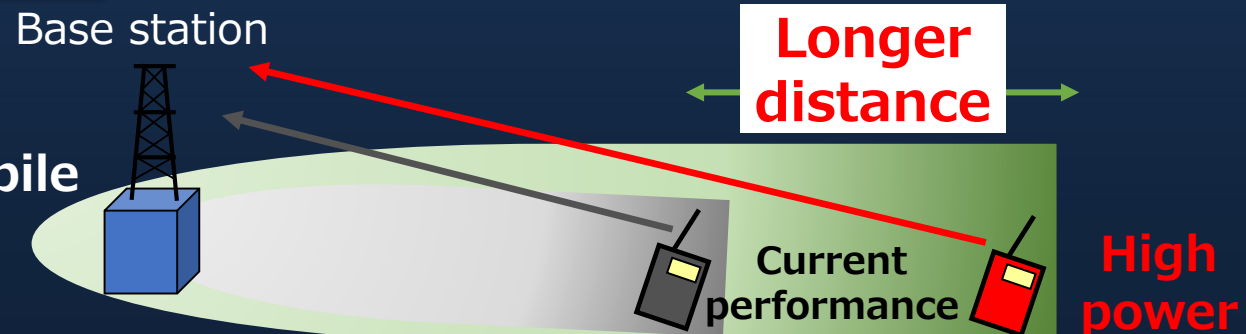
2 Femtocell base station/ Low power repeater

Make home inside as a 5G area



3 High power user equipment

By advancement of mobile phone with high power, distance and quality of mobile phone is increased.



Mobile Phone Area Development Project

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The government subsidizes part of the installation costs for local public bodies and wireless telecommunications operators, etc., to develop 5G base stations or similar facilities in geographically disadvantaged areas (depopulated areas, remote areas, islands, peninsulas, etc.).

Budget for FY2024 (proposed): 2,300 million yen (FY2023 budget: 1,798 million yen)

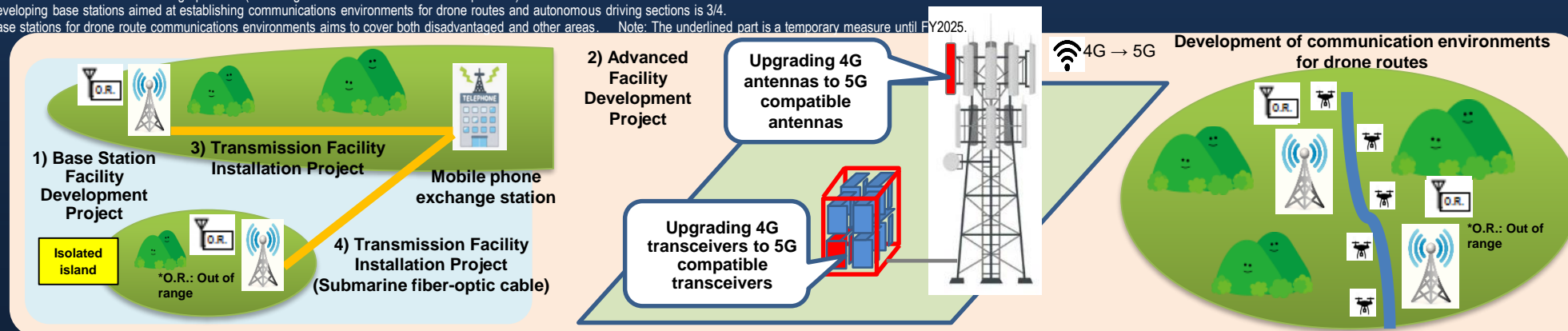
Revised budget for FY2023: 3,923 million yen

Overview of the Policy				Budget for FY2024 (proposed): 2,300 million yen (FY2023 budget: 1,770 million yen) Revised budget for FY2023: 3,300 million yen									
	Project name	Contents of the project	Project executing entities	Subsidy rate									
I.	Base Station Facility Development Project	Subsidies for the installation costs of mobile phone base stations to eliminate coverage gaps, including areas already covered* <u>Including drone route segments</u>	Local public bodies/wireless telecommunications operators/infrastructure sharing operators, etc. *1	Project entities: Local public bodies [In the case of development by one company] <table><tr><td>Government *2 1/2</td><td>Prefectures 1/5</td><td>Municipalities *3 3/10</td></tr></table> [In the case of development by multiple companies] <table><tr><td>Government *2 2/3</td><td>Prefectures 2/15</td><td>Municipalities *3 1/5</td></tr></table> *2: The subsidy rate for development by one company in insensitive areas is 1/3 (temporary measure until FY2024), 3/5 for island regions by one company, and 3/4 for multiple companies. *3: A portion is to be borne by mobile phone operators in accordance with the Local Autonomy Act and relevant regulations.				Government *2 1/2	Prefectures 1/5	Municipalities *3 3/10	Government *2 2/3	Prefectures 2/15	Municipalities *3 1/5
Government *2 1/2	Prefectures 1/5	Municipalities *3 3/10											
Government *2 2/3	Prefectures 2/15	Municipalities *3 1/5											
II.	Advanced Facility Development Project	Subsidies for the installation costs of mobile phone base stations, such as 5G, for advanced wireless communication in areas where 3G and 4G are available <u>Including segments for autonomous driving</u>	Project entities: Wireless telecommunications operators, infrastructure sharing operators, etc. *4 [In the case of development by one company] <table><tr><td>Government *2 1/2</td><td>Wireless telecommunications operators 1/2</td></tr></table> [In the case of development by multiple companies] <table><tr><td>Government *2 2/3</td><td>Wireless telecommunications operators and others 1/3</td></tr></table> *4: The target areas for subsidies for the Base Station Facility Development Project are municipalities with a fiscal strength index of 0.5 or below.				Government *2 1/2	Wireless telecommunications operators 1/2	Government *2 2/3	Wireless telecommunications operators and others 1/3			
Government *2 1/2	Wireless telecommunications operators 1/2												
Government *2 2/3	Wireless telecommunications operators and others 1/3												
III.	Transmission Facility Operation Project	Subsidies for the operational costs of developing transmission paths necessary for the establishment of mobile phone base stations to eliminate coverage gaps or for advanced wireless communications	Telecommunications carriers/infrastructure sharing operators, etc. *1	[For eliminating coverage gaps for over 100 households] [For advanced wireless communications, in the case of development by one company] <table><tr><td>Government *2 1/2</td><td>Wireless telecommunications operators and others 1/2</td></tr></table> [For eliminating coverage gaps for under 100 households] [For advanced wireless communications, in the case of development by multiple companies and similar cases] <table><tr><td>Government *2 2/3</td><td>Wireless telecommunications operators and others 1/3</td></tr></table>				Government *2 1/2	Wireless telecommunications operators and others 1/2	Government *2 2/3	Wireless telecommunications operators and others 1/3		
Government *2 1/2	Wireless telecommunications operators and others 1/2												
Government *2 2/3	Wireless telecommunications operators and others 1/3												
IV.	Transmission Facility Installation Project	Subsidies for the installation costs of transmission paths necessary for the establishment of mobile phone base stations to eliminate coverage gaps	Local public bodies	[For eliminating coverage gaps for over 100 households] [For advanced wireless communications, in the case of development by one company] <table><tr><td>Government 3/4 *5</td><td>Municipalities on isolated islands 1/4</td></tr></table> *5: For municipalities with a fiscal strength index below 0.3 on inhabited remote, isolated islands (entirely isolated islands), the subsidy rate is 4/5, 1/2 for prefectures and municipalities other than those on isolated islands, and 1/3 for Tokyo.				Government 3/4 *5	Municipalities on isolated islands 1/4				
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*1. In this project, infrastructure sharing operators, etc., refer to those who do not provide mobile phone services themselves but develop facilities necessary for multiple wireless telecommunications operators to share infrastructure (like towers and antennas) for providing mobile phone services (infrastructure sharing operators) and the coordinating entities with these infrastructure sharing operators (excluding wireless telecommunications operators).

The subsidy rate for developing base stations aimed at establishing communications environments for drone routes and autonomous driving sections is 3/4.

The development of base stations for drone route communications environments aims to cover both disadvantaged and other areas. Note: The underlined part is a temporary measure until FY2025.



Trials Demonstrating Solutions Through Local 5G

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[FY2022 Original Budget Request: 4.0 Billion JPY]
[FY2021 Supplementary Budget: 800 million JPY]
[FY2021 Original Budget: 6.0 Billion JPY]

<Summary>

“**Local 5G**” (in other words, enterprise 5G, private 5G, etc.) is a systems which can be built flexibly by individual user such as factories, farmers, contractors, etc., to meet the needs of a diverse range of such stakeholders. Trials regarding Local 5G that estimate real world use scenes have been implemented for purposes such as various problem-solving or realization of new value creation. System development that enable flexible operation of Local 5G and establishment of system that enable generic and easy use of Local 5G have been also promoted.

<Implementing Trials Based on Real World Use Scenes >

