

Executive Summary

The discussion on smart cities started in the early 2000s in an effort to efficiently manage ICT-based city and to create a better urban environment, eventually evolving into various concepts such as sustainable city, inclusive city, resilient city, civic capacity building, and systematical urban development now. Internationally, smart cities are discussed from four perspectives: alleviation of urban issues through ICT, improvements to governance such as public policy making, capacity building, and data management by citizens, pursuit of an environmentally, socially, economically sustainable city, and systematical urban development & infrastructure development.

The UN has adopted 17 Sustainable Development Goals (SDGs) as a goal that the international community should jointly pursue by 2030 for 'Leave no one behind' development. There is much interface between smart cities and the SDGs, especially Goal 6. Clean Water and Sanitation, Goal 7. Affordable and Clean Energy, Goal 9. Industry, Innovation and Infrastructure, Goal 11. Sustainable Cities and Communities, and Goal 13. Climate Action. Since smart cities are closely related to science and technology innovation, the role of the smart city project is gaining more importance in the process of achieving the SDGs.

In developing countries that are experiencing pseudo-urbanisation due to rapid urban population growth, the demand for securing infrastructure through systematical urban development and managing efficiently the existing urban areas is increasing. The lack of infrastructure compared to the exponentially increasing urban population leads to forming slums such as informal settlements and being trapped in a vicious cycle of waste disposal, environmental pollution, crime, and poverty, creating the demand for smart cities along with digital transformation. Developing countries are presenting a blueprint for the transition to a smart city, expecting economic development through infrastructure supply plans and project development through systematical urban development. The key to building smart cities in developing countries is to provide urban infrastructure and thereby to spur economic growth in an effort to accommodate the rapidly increasing urban population through systematical urban development.

It is important to understand how developing countries are trying to utilize smart cities in order to support smart city development in developing countries in the form

of official development assistance or ODA. Since the level of technology and the level of infrastructure for technology use are different for each country, the smart city project should be developed in consideration of the target country's policies, strategies, organizations, and human capabilities. The ODA funded smart city project is highly likely to end up in a unilateral project that does not fit the local conditions of a partner country, when it is understood only as ICT-based models like 'data sensing, data collection, data calculation for optimization and data solution' led by private IT giants, or only as the green low-carbon policy used in Europe. Rather than simply to apply ICT, it is necessary to examine what approaches can be helpful to deal with the urban issues at hand in developing countries and to push forward the smart city project to achieve the common goal of the international community.

Analysis on urbanization and urban policies of key partner countries are critical in strategically setting the direction of support for smart city development in major partner countries through KOICA ODA. According to analysis on efficient smart city project development, it was found that it is effective to develop the smart city project as a solution for the urbanization issues by placing Asia as a priority in the selection of target region, when urbanization rate on the rise, economic growth potential, and geopolitical factors of the region is considered. On the other hand, what should be noted in the urbanization rate is the rapid growth of small and medium-sized cities. Small and medium-sized cities with a population of less than 1 million show the fastest population growth in most regions. As in large cities, the emphasis should be on renovating existing infrastructure and solving the slum issue, but the problems may be acute in these small and medium-sized cities due to insufficient financial resources. The strengthening of the role of local central cities as an alternative to megacity concentration is the reason why the concept of small and medium-sized cities should be positively considered for ODA projects.

In consideration of the urban development status and smart city project trends in major partner countries, the strategies of the ODA funded smart city project plan can be summarized as follows: First of all, we will focus on the small and medium-sized projects, and the project for management system enhancement on the city that is highly likely to be implemented in practice. Second, in the case of land and housing projects, we focus on projects to reform systems such as related laws or to develop human capabilities, in order to provide fundamental support for the actual implementation of the project. Third, we focus on projects on balanced regional development and locally specialized industries in response to current urban

concentration issues. Fourth, the plan is to combine various financial sources such as grant, concessional loan, and PPP, in order to increase the ripple effect of the project.

Based on these strategies, KOICA's mid and long-term plan for smart city project is to reflect local citizens and local demand, improve accessibility and sustainability through maintaining affordable cost, develop comprehensive multi-sectoral connectivity as an urban space program, and put together relevant projects as a comprehensive package by combining funding sources. These can be summarized into the following five goals. First, it is a 'Localized Smart City' that reflects the needs of citizens and the conditions of the recipient country or region. Considering the broad scope of smart city projects, the ODA funded smart city project should not be managed by a top-down method through a specific integrated model, but an upward-facing method that reflects the local conditions and the needs of the recipient country's citizens. Second, it is a 'People-oriented Smart City' that strengthens the capabilities of local citizens and broadens the scope of benefits. Considering that the ultimate beneficiary of the smart city project is citizens, the ODA funded smart city project should strengthen the citizens' capabilities and influence on policies in the future. Third, it is a 'Comprehensive Smart City' that considers all fields of urban infrastructure in an holistic view. Considering the broadness and diversity of smart city areas and the interconnectedness of sub-projects in the urban field, the ODA funded smart city project should take not a sector-by-sector segmented approach, but a holistic approach to renovate the urban infrastructure within the city space. Fourth, it is a 'Sustainable Smart City' that considers environmental, social and economic sustainability. Considering the concept of sustainability that encompasses the environmental, social, and economic characteristics, the ODA funded smart city project should be environmentally sustainable, such as using low-carbon fuels and renewable energy, inclusively sustainable such as considering the socially vulnerable, and financially sustainable such as securing affordability that enables the recipients to pay the cost for the outcomes generated by the project. Lastly, it is an 'Affordable Smart City' that considers the economic conditions of the recipient country. Considering the inclusiveness of smart cities and the conditions of recipient countries and local citizens, the ODA funded smart city project should not be a high-end product that only a few of citizens can enjoy, but rather be universal outcomes that the majority can afford and enjoy the benefits from.

Mainly with an emphasis on small and medium-sized cities, the four major partner countries in Chapter 4 present plans for promoting the smart city development in consideration of co-financing with grant and concessional loan, in order to bring

about synergy effect between projects. When planning a smart city project with co-financing, it is necessary to improve the current project planning and selection system by reflecting the following points. First, considering the differences in the project planning process and period of each organization, such as KOICA, EDCF, and ADB, we need to form and operate regular partnerships with experts engaged in overseas projects from public organization and academia, to share the project ideas suggested by the recipient country, and to develop a system that link each organization and their own detailed elements for the project. In particular, it is important to develop projects with a large ripple effect that reflect local needs. It is possible by maintaining and increasing communication with expert groups such as civil servants involved in the project in the recipient country from the initial stage of the project. In addition, it is necessary to get rid of the barriers by setting a certain ratio of tasks for co-financing projects between organizations and developing relevant projects in an integrated way that can bring about synergy effect between projects.

The concept of smart city, which began to be used worldwide with the goal of alleviating urban issues based on ICT in the late 2000s, has been expanded, including various fields such as citizen participation in policy making, sustainability, and systematical urban development. This report aims at establishing management guideline of the KOICA ODA smart city project. As such, this report reviews the concept of smart city from the perspective of SDGs and developing countries as recipients of ODA, and identifies the local needs and conditions based on the review of the smart city projects carried out in Indonesia, the Philippines, Vietnam, and Mongolia as key partner countries. Lastly, the project management plan of smart city development, which is suitable for the local needs and conditions of these countries, reflects the features of KOICA ODA projects by considering the average project size, the project characteristics related to the beneficiaries, sustainability, and maximization of ripple effects, and corresponding to the five goals of smart city project management that include the local context smart city, people-centered smart city, comprehensive smart city, sustainable smart city, and affordable smart city.