

**Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.**

**1. Understanding of the present situation**

**(1) Why is it necessary to promote industrialization, build infrastructure, and foster innovation?**

The average of the value-added ratio of manufacturing industry to GDP is 9% in low-income countries, 18% in lower middle-income countries, and 26% in the upper middle-income countries.<sup>1</sup> This shows that the ratio increases according to economic level. In Asia, in order to accelerate economic growth, establishing key industries and fostering innovation should be addressed for the higher added values. In Africa, however, because the amount of manufacturing values-added accounts for only 1.5% of the world's total, it is necessary to first establish the secondary sector through the creation of businesses.

Manufacturers' activities are influenced not only by internal factors but also by external factors. For example, whether they can continue operations depends on the condition of infrastructure, such as a stable power supply, arterial roads, and ports. In addition, because of the disorderly expansion of urban areas and the promotion of motorization, serious problems have arisen, such as traffic congestion and air pollution. What's more, large-scale earthquakes, and serious storm and flood damage due to recent climate change have become major problems. It is necessary to promote inclusive industrialization to restrain the gaps which are expanding in the freedom of the flow of people and products, and the economic gaps between regions, as well as to achieve sustainable development while minimizing the influence of disasters. In this regard, in order to maintain the expected growth rate between 2016 and 2030, it is estimated that the funding needed to build infrastructure is an investment of 3.3 trillion dollars every year on average worldwide, and 60% of this is in emerging countries.<sup>2</sup> Furthermore, there is a need to build resilient and high-quality infrastructure, and establish a system that can maintain the infrastructure functions for many years despite any fiscal restrictions.

Sustainable promotion of industrialization requires the fostering of innovation. According to the result of international innovation comparisons, the top 50 countries only include two Asian developing countries and no African countries.<sup>3</sup> In order to achieve further economic growth while evading the traps in middle-income countries in Asia and in order to realize economic growth with non-traditional economic development models in Africa, it is essential to foster innovation so that science and technology can lead the development of industries.

1 World Bank's data bank (<http://data.worldbank.org/indicator/NV.IND.MANF.ZS>)

2 <http://www.mckinsey.com/industries/infrastructure/our-insights/bridging-global-infrastructure-gaps>

3 Cornell University, INSEAD & WIPO 'The Global Innovation Index 2015'

## **(2) Japan's efforts**

Mainly in advanced ASEAN countries, Japan has actively supported the construction of infrastructure and the promotion of industries, through ODA and has contributed to the promotion of economic growth and regional economic integration through the expansion of trade.

The Development Cooperation Charter announced by the Japanese government in 2015 has designated “‘quality growth’ and poverty eradication through growth” as a priority issue. The quality growth is planned to be achieved through the development of human resources and the construction of infrastructure for self-sustaining development, and also through development of the private sector supported by the establishment of legal systems.

In TICAD, enterprise development and trade support are always stressed in declarations. The Yokohama Action Plan, which was announced at TICAD V in 2013, set the following as important pillars for the promotion of trade and investments: the construction of infrastructure; the development of industries; the promotion of science, technology, and innovation; vocational training and the development of industrial human resources. Since the 2000s, TICAD has emphasized the policy of industrialization support in the form of public-private cooperation with the overseas expansion of supporting Japanese companies. Activities to connect those Japanese companies with markets not only in Asia but also in other regions have become conspicuous.

## **(3) JICA's strength**

With regard to industrialization, both Japanese companies and the Government accumulated know-how during the postwar industrial development. For example, the quality control and productivity improvement skills that are widely known as “Kaizen,” have been standardized through the practice of many companies’ and have become available for use in various other fields. When it comes to promoting investment and trade, JICA is good at supporting the improvement of systems and strengthening the capacities of administrative agencies and human resources. Recently, JICA has been promoting cooperation in projects to develop special economic zones. In addition, the human resources in Asian countries and other developing countries, which were developed through the support of JICA’s past projects, can also be used as cooperative resources for the future.

Regarding infrastructure development, as efforts to realize sustainable economic growth, JICA has promoted projects for infrastructure development beyond borders in each region, such as the improvement of connectivity in the ASEAN region, the development of African corridors, and the establishment of economic corridors and international road networks in regions other than ASEAN and Africa. In addition, by the use of experience and achievements, JICA has provided consistent support for the design of systems, the strengthening of organizational capacities, and the construction of facilities and has made assistances to private companies’ participation in projects.

Moreover, in order to be able to use the existing infrastructure for as many years as

possible, JICA has made efforts to prepare maintenance manuals and guidelines, strengthen the operation and maintenance systems by incorporating asset management, construct resilient infrastructures through earthquake-resistant design, etc., and promote ICT for the more effective use of existing infrastructure.

In the field of promoting innovation, the style of Japanese universities whereby research is conducted by the office of each professor under the leadership of the professor, is useful as a reference for the development of research human resources.

## 2. Priority targets

Goal 9 consists of five targets. Taking into consideration Japan's efforts and JICA's achievements and know-how in the sectors of private sector development, infrastructure development, and the global environment, JICA will promote dynamic development that will offer favors to all people through collaboration with the various actors, mobilization of development funds, and utilization of Japanese technologies in order to actively contribute to the following three targets:

[Efforts for industrialization]

- 9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries (Implement cooperation by integrating the elements specified in 9.3, such as financial services including affordable credit and integration into markets)
- Increased employment and inclusive industrialization are the most important policies to assist industrial development.

[Efforts for infrastructure development]

- 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
- Equitable and safe infrastructure serves as a basis for inclusive industrialization.

[Efforts for the fostering of innovation]

- 9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending
- Innovation is important to promote the further development of industrialization in the future.

### 3. Priority efforts to achieve the goals

#### [Efforts for industrialization]

#### **(1) Support for industrialization through the formulation of investment, trade, and industrial policies, development of industrial human resources, and Kaizen dissemination**

In ASEAN and other Asian regions, JICA will contribute to the development of engineers and business human resources that will be useful for the promotion of investments in the private sector in Japan. JICA will promote industry, academia, and government's joint creation of new business opportunities within each region through cooperation with the Japan Centers and the private sector's proposal-type projects, and make efforts to improve their financial access. In Africa and other regions, JICA will develop entrepreneurs to serve as business partners to the private-sector in Japan through Kaizen projects, the ABE Initiative,<sup>4</sup> etc. and, at the same time, support the business development of Japanese companies through the use of proposal-type projects, etc., and promote the creation of new business opportunities in the regions. In addition, irrespective of the region, JICA will support the formulation of various policies concerning investment, trade promotion, industries, and small and medium enterprises through policy dialogue, etc. and promote the development of related human resources.

#### [Efforts for infrastructure development]

#### **(2) Response to economic globalization with due consideration for the development stage**

To respond to economic globalization, JICA will support the construction of infrastructure with due consideration for the development stage in developing countries, based on its accumulated on-site experience. For example, JICA will provide low-income countries with support that will contribute to strengthening their international competitiveness, such as assistance with basic infrastructure and economic corridor infrastructure development, while JICA will support middle-income countries in their construction of gateways and economic corridor, such as ports and airports, and infrastructure for urbanization.

#### **(3) Safe and reliable movement (positive consideration for inclusiveness)**

JICA will give positive consideration to not only the national minimum but also the civil minimum, bearing in mind "infrastructure that will fulfill people's hopes." To cope with the increased risk of natural disaster, JICA will promote support for infrastructure construction, taking into consideration the viewpoints of pro-poor, gender, and inclusiveness, such as the development of resilient infrastructure to minimize the risks

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<sup>4</sup> ABE Initiative is the abbreviation of the African Business Education Initiative for Youth. This was publicly announced at TICAD V in 2013. This is a plan to provide 1,000 young people in Africa with opportunities of education at universities and graduate schools in Japan and internship at Japanese companies for five years.

associated with natural disasters, the strengthening of systems for operating and maintaining accumulated infrastructure assets, the construction of local roads beneficial to those without appropriate access, including pregnant women in remote areas, and the establishment of environments that can be used by socially vulnerable people, such as the handicapped.

#### **(4) Sustainability of growth (sustainability of the environment)**

When people and industries are concentrated in metropolitan cities, with traffic congestion and the housing environment worsening, it is necessary to demonstrate a sustainable growth model based on environmental restrictions instead of demand-oriented development, which is considered to be contributing to the achievement of “sustainable cities.” In addition to controlling development, JICA will promote support for systems that make the whole infrastructure sustainable, such as the construction of mass transport facilities, human resource development, the construction of systems, and the formulation of plans.

#### **[Efforts to foster innovation]**

#### **(5) Fostering of innovation**

JICA will foster innovation through the development of human resources in advanced science and technology through the establishment of core engineering universities and the construction of human resource networks for regional brain circulation, such as AUN/SEED-Net<sup>5</sup> and the Pan African University<sup>6</sup> and also through the continuous implementation of SATREPS projects.

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<sup>5</sup> AUN/SEED-Net is the abbreviation for ASEAN University Network/Southeast Asia Engineering Education Development Network. It is a project to develop human resources through higher engineering education that is provided to improve the education and research capacity of the 19 top engineering universities in ten ASEAN countries.

<sup>6</sup> This plan was formulated by the Africa Union Commission (AUC). Africa is divided into five regions (northern, western, central, eastern, and southern). Target fields are set in each region. There is a host country, a host university, and also support partner countries in each region. Japan is a support partner in the eastern region.