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# TRANSPORT, ROADS AND TRAFFIC

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## 1 Introduction

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The situation for roads has been changed dramatically in the last few years. On the one hand, the difficult problems of the falling birthrate, aging of the population, increasingly devastating natural disasters, and aging of the infrastructure have to be faced, while on the other hand, it is also necessary to respond to social appeal for a new form of coordination and synergy achieved via the fast-paced development of technological breakthroughs, the reconsideration of the relationship between people and automobiles, and road space.

Under these circumstances, the Policy Subcommittee of the Road Committee of the Panel on Infrastructure Development has held a series of discussions since June 2016 on the road policy vision that should be pursued. In August 2017, the three recommendations (proposals) of “roads/traffic and innovation”, “optimal combination of people and cars”, and “the further openness of roads” were formulated as new directions for road policies and announced by the Road Committee.

This article presents the current understanding of socioeconomic conditions identified in the proposals, as well as the envisioned society and road policies, and the new direction of the road policy.

## 2 Current Understanding of Socioeconomic Conditions

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The proposals identified the six items below in terms of the current understanding of socioeconomic conditions.

### 2.1. Falling Birthrate, Aging of the Population, and Their Effect on Everyday Life

Japan has already become a society where the population is both declining and aging. Consequently, concerns over the shrinking of the public transportation, and the securing of means of transport imposed, particularly in the regions, by an increase in the number of elderly people who cannot drive a car, have become critical issues.

In addition, there is a serious shortage of drivers in the freight transportation sector.

### 2.2. Issues to Achieve the Sustainable Growth of the Japanese Economy

Although the Japanese economy is exhibiting continued signs of a gradual recovery, the GDP growth rate remains low. Escaping deflation entirely and achieving sustainable growth for the Japanese economy will require drawing out latent growth capability by building a mid- to long-term foundation for growth.

### 2.3. Rapid Development of Information and Communication Technology (ICT)

Technological breakthroughs such as IoT, big data, AI, robots, and sensors have been evolving at a breakneck pace and have the potential to cause upheavals in the structure of society. Various new technologies are also evolving across the entire field of land and transport, including the establishment and maintenance of infrastructure, and road traffic services, and are expected to contribute to improving productivity and to the development of socioeconomic conditions.

### 2.4. Increasingly Devastating Natural Disasters and Imminent Major Earthquake

Patterns of rainfall and snowfall have recently become more localized, concentrated, and devastating, and the alarm is also being sounded over the imminent occurrence of a major earthquake such as the Nankai Trough or Metropolitan inland earthquakes. With the growing sophistication of socioeconomic activities, highlighted by the expansion of the logistics supply chain and the progress of globalization, for example, the effects of a natural disaster might not be limited to the immediately affected region, but potentially be felt over a large area and also become complex and prolonged.

### 2.5. Accelerating Increase of the Aging of the Infrastructure

The aging of the social capital intensively accumulated during and after the period of high economic growth is

steadily advancing, and could threaten the socioeconomic safety and stability of the next generation. Aging infrastructure is primarily managed by regional public organizations, and being negligent about timely and appropriate maintenance causes subsequent upgrade costs to skyrocket and presents the risk of straining regional finances.

#### **2.6. Striving to Become “a Tourism Nation”**

In Japan, tourism is currently regarded as the key to regional revitalization and defined as a pillar of the growth strategy, with comprehensive and strategic initiatives taken to become a tourism nation. In anticipation of the upcoming Tokyo Olympic and Paralympic Games, the challenge of building a world-class, fascinating country, starting with the creation of sightseeing tour routes covering a broad area, must be tackled.

### **3 Envisioned Society and Road Policy**

The proposals identified the five items below in terms of the envisioned society and road policies.

#### **3.1. Improved Productivity Contributing to Economic Growth**

Despite the decline of the workforce forecast by the falling birthrate and super aging society, it is essential to both increase latent growth capacity and uncover new demand through means such as improving productivity to a level that overcomes these issues. Doing so calls for initiatives predominantly focused on establishing and strengthening infrastructure with a strong stock effect that leads to improved productivity for society as a whole. It also requires a further strengthening of initiatives from the perspective of use and utilization that builds upon the progress of the establishment of the road network.

#### **3.2. Achieving Regional Revitalization and Reviving Regional Economies**

Support designed to raise industrial competitiveness that leverages local characteristics and resources such as history, culture, and traditions is essential to revitalizing rapidly depopulating regions and reviving their economies. It is also important to promote collaboration between a variety of regions with distinctive personalities, which makes it necessary to build strongly connected mutual interaction networks between regions and stimulate their economic activities.

#### **3.3. Ensuring Safety and Security for Citizens**

Based on the awareness that Japan is a land vulnera-

ble to the frequent occurrence of various natural disasters, and building on the concepts of proactive disaster prevention and mitigation, it is necessary to further strengthen both structural and behavioral measures designed to minimize loss of human life and assets in the event of a disaster. With respect to aging infrastructure and in the context of a declining population and tight fiscal constraints, it is necessary to pass down a country and regions offering a safe and secure through the introduction of new technologies and a revision of suitable maintenance management based on the concept of preventive maintenance.

#### **3.4. Plan for Dynamic Engagement of All Citizens**

In both cities and regions, it is necessary to approach the establishment of required infrastructure from a mid- to long-term perspective aligned with regional circumstances. At the same time, it is necessary to build a society that involves all people and gives everyone an opportunity to shine by creating “people-centric” road spaces through the provision of means of transport and mobility in the region for each person, safe and pleasant walking spaces, and the application of universal design.

#### **3.5. Social Implementation of Innovation**

Out-of-the-box thinking and bold action are essential to capitalize on the rapid progress of technological breakthroughs and solve the issues affecting roads and traffic. It is necessary to change the land utilization and the vision of the regions, as well as foster improved productivity and create new services or industries by carrying out even smarter establishment, extensive use, and maintenance management of infrastructure while incorporating technology and new ideas and systems unfettered by the past.

### **4 Direction of the New Road Policy —**

In considering the new direction of road policies based on “the current understanding of socioeconomic conditions” and “the envisioned society and road policies”, it is important to create a framework that emphasizes not only road “establishment” but also “usage” factors such as stable utilization of the road network and maximizing road functionality. The proposals identified the three items below in terms of the new direction of the road policy.

#### **4.1. Road and Traffic Innovations: Transforming Society through Roads**

Making maximum use of ICT, in which technological

breakthroughs such as IoT, big data, AI, robots, and sensors has been evolving at a breakneck pace in conjunction with strengthening the coordination between roads and diverse modes of transportation, have been proposed as approaches to solve the various road and traffic issues faced by Japan. Working toward a new social implementation of ICT requires ambitious unified government-industry-academia involvement in demonstration tests that consider potential future situations, and making efforts to define concepts, mechanisms and rules as well as to ensure social receptivity without remaining constrained to past usage patterns.

One example are the social tests of automated driving services in semi-mountainous regions using *michi no eki* roadside stations as hubs, which represents a first step toward an early social implementation that takes desired driving environments and user needs into account.

The development and use of new technologies will not just further bring out road functionality, but also never-before-seen usages and added value, raising expectations that they will lead to a social and economic reform and paradigm shift that starts with lifestyles and day-to-day activities.

#### 4.2. Optimal Combination of People and Cars: Realizing Advanced Road Traffic

The basic concept of road establishment sets a hierarchy of major arterial or other roads primarily used by vehicle traffic, and auxiliary arterial or other roads that give priority to pedestrian traffic, and defines an appropriate structure for each of those types.

Until now, efforts have been directed at the separation of traffic (separation of travel direction, separation of people and vehicles) for arterial or other roads, but Japan still has many expressways that only provisionally have two lanes or many national roads without sidewalks, and there is a need to apply road establishment allowing anyone to drive or walk safely and enjoyably. In contrast, for narrow roads near train stations or communities and focusing on a “people-centric” space, the concept of “mixed traffic” has been proposed to complement conventional “separation” by adapting to the diversification of means of transportation such as bicycles or low-speed mobility and achieving coexistence with public transportation, as well as expanding the use of limited space.

At the same time, the Tokyo Olympic and Paralympic Games represent an important opportunity in terms of introducing new road policies. This should be set as a

target to assess and manage a system design for integrated optimization based on traffic demand management policies.

#### 4.3. Further Openness of Roads: Pursuing Diverse Coordination and Synergy

Building new public-private ties and relationships, and the sharing of awareness based on common data have been identified as essential to maximizing usage adapted to the needs and charm of regions in the context of the set proportion of space occupied by roads within the limited urban space. The proposals identify the three items below with respect to further “openness”.

##### (1) Openness of spaces and exclusive road use

Make road space benefit everyone and have everyone use it to the fullest, enhance regional charm, and strengthen connections between modes of transportation. Promising examples include rethinking roads as a three-dimensional space that includes up and down, integrated use of the roadside and road space, and the creation of spaces featuring both traffic hub and disaster prevention functions.

##### (2) Openness of Discussion and Assessments

Promote the building of new public-private sector ties and relationships to establish a shared awareness between road users, including local residents, and road supervisors or other authorities while offering venues for discussion and establishing rules.

##### (3) Openness of road information

Build a framework that creates a shared government-industry-academia understanding of big data concerning regional traffic and enables coordination to address regional issues.

## 5 Conclusion

The proposals recommend the following nine specific road policies based on the new direction of the road policy.

- (a) Moving to the second stage of maintenance
- (b) Implementing a comprehensive traffic safety policy
- (c) Making roads with high levels of safety and reliability against disasters
- (d) Striving to ensure smooth mobility
- (e) Securing the strategic flow of people and goods
- (f) Strengthening model connections (links between transportation modes)
- (g) Building new government-industry-academia ties in the regions

(h) Usage of road spaces adapted to needs

(i) Striving to become “a tourism nation”

Consult the reference documents for details on the specific road policies.

#### References

- (1) Ministry of Land, Infrastructure, Transport and Tourism, Road Section, Panel on Infrastructure Development: The Proposals on Road and Traffic Innovation, <http://www.mlit.go.jp/common/001201778.pdf> (in Japanese)