

博士論文

**Studies on Responses of Government Organizations  
to External Requirements and Expectations  
—From Organizational Culture and Absorptive Capacity Perspectives**

(政府機関の外的要請や期待への反応に関する研究  
—組織文化及び吸収能力の観点から)

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The author will continue to work in the field of international development taking part in an attempt for achieving "an Asia and Pacific free from poverty." The author will do his best to utilize the academic research conducted in the University of Tokyo for the sake of poor beneficiaries in the Asia and Pacific.

Author (Masahiro Nishimura)  
in Manila on 1 February 2018

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## Acronyms

ADB	=	Asian Development Bank
CO <sub>2</sub>	=	carbon dioxide
COP	=	Conference of the Parties
DAC	=	Development Assistance Committee
DPJ	=	Democratic Party of Japan
EIA	=	environmental impact assessment
FHWA	=	Federal Highway Administration
FY	=	fiscal year
GOJ	=	government of Japan
IC	=	integrated circuit
ISF	=	Interim Storage Facility (in Fukushima Prefecture, Japan)
JACSES	=	Japan Center for Sustainable Environment and Society
JESCO	=	Japan Environmental Storage & Safety Corporation (formerly Japan Environmental Safety Corporation)
JICA	=	Japan International Cooperation Agency
JSTE	=	Japan Society of Traffic Engineers
LDP	=	Liberal Democratic Party
MAFF	=	Ministry of Agriculture, Forestry and Fisheries
METI	=	Ministry of Economy, Trade and Industry
MITI	=	Ministry of International Trade and Industry
MLIT	=	Ministry of Land, Infrastructure, Transport and Tourism (formerly Ministry of Land, Infrastructure and Transport)
MOE	=	Ministry of the Environment
MOF	=	Ministry of Finance
NGO	=	non-governmental organization
NILIM	=	National Institute for Land and Infrastructure Management
NPM	=	new public management

ODA	=	official development assistance
OECD	=	Organisation for Economic Co-operation and Development
PCB	=	polychlorinated biphenyl
PIARC	=	World Road Association
PMRA	=	performance management of road administrations
RSA	=	road safety audit
RSI	=	road safety inspection
TOE	=	traffic operations engineer
TOP	=	traffic operations practitioner
UK	=	United Kingdom
UN	=	United Nations
UNCED	=	United Nations Conference on Environment and Development
U.S.	=	United States
WHO	=	World Health Organization

## **Units**

€	=	Euro
JPY	=	Japanese yen
m	=	meter
m <sup>3</sup>	=	cubic meter
mSv	=	milli-sievert

## **Disclaimer**

The views expressed in this article are the views of the author and do not necessarily reflect the views of organizations that the author has belonged to.



# Chapter 1

## Introduction

### 1.1 Background

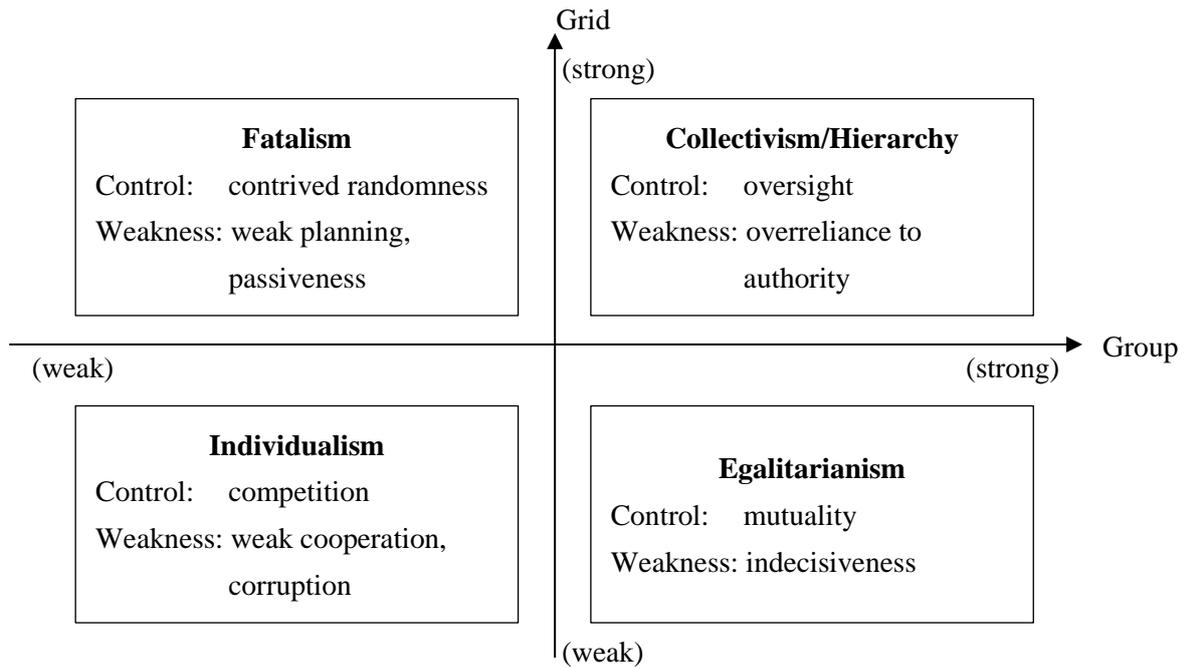
Japan and its government are facing a growing number of various challenges that require innovative and flexible responses. The population is expected to further decrease while inbound tourists are rapidly growing. The industrial and economic structure is changing towards a more service-oriented economy. Unprecedented levels of disasters are occurring one after another. However, the government of Japan (GOJ) organizations are known for its unique culture called “Kasumigaseki Culture”, which is not sufficient ground for innovative and flexible responses to unprecedented challenges.

This dissertation studies the responses of GOJ organizations to external requirements and expectations from the perspectives of organizational culture and absorptive capacity. It focuses mainly on two contrasting cases, in which ministries of the GOJ responded to: (i) the unprecedented challenge of transporting radioactive soil and waste to the Fukushima Interim Storage Facility (ISF) after the Great East Japan Earthquake and Tsunami on 11 March 2011 and (ii) the application of an international good practice, road safety audits (RSAs), which almost all major countries but Japan had adopted. The government organizations were required to react innovatively and flexibly in those cases although the GOJ organizations in general do not have organizational cultures that promote innovation. This dissertation identifies the key factors that led two GOJ ministries, namely the Ministry of the Environment (MOE) and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), to innovative responses with consideration to their organizational culture and absorptive capacity and identify the enabling

factors for organizations like the GOJ to react more flexibly and innovatively to external requirements and expectations. Some other cases from each ministry were also examined to provide further observations on their organizational behaviors.

The GOJ emphasized in its innovation polity (Cabinet Office, 2007) that innovation is growingly important as Japan and the world are entering an era that human beings have never experienced before and that creation of enabling environment which supports the ambitious and challenging efforts of individuals is needed.

Culture is an important factor in organizational analysis (Smircich, 1983). Culture can be studied as an integral part of the adaptation process of organizations, and specific cultural traits may be useful predictors of performance and effectiveness (Denison & Mishra, 1995). Douglas and Wildavsky (1983) developed the four prototypical cultural types using two central dimensions of sociality: grid and group. It is assumed that individual human behavior and collective cultures can be categorized by two independent elements: grid and group dimensions. The grid dimension describes how different people are in the group and how they take on different roles. People have distinct roles and positions within the group with specialization and different degrees of entitlement under strong grid cultures, while people are relatively homogeneous in weak grid cultures. On the other hand, the group dimension describes how strongly people are bonded together. Under strong group cultures, people have a connected sense of identity, relating more deeply and personally to one another. Cultural types can be categorized into four quadrants based on the strength of the grid and group dimensions: (i) collectivism/hierarchy, (ii) fatalism, (iii) individualism, and (iv) egalitarianism, as **Figure 1.1**.



Source: Author, based on Douglas and Wildavsky (1983), Rippl (2002), and Nishio (2003)

**Figure 1.1: Typology of Culture Using the Grid/Group-Dimension**

In the egalitarianism culture, for example, people have high interest and high identification regarding group relations (strong group dimension), but they dislike social relations that are shaped by social differences or hierarchic structures (weak grid dimension). Diagonally opposed groups show differences on both dimensions (grid and group), while neighboring groups show similarities on one dimension but differences on the other (Rippl, 2002).

Organizational culture fosters or inhibits innovation. Naranjo-Valencia, Jiménez-Jiménez, and Sanz-Valle (2011) found that organizational culture was a clear determinant of innovation strategy; adhocracy cultures foster innovation, whereas hierarchical cultures promote imitation. Each organization has a different culture, and Chatman and Jehn (1994) found that stable organizational culture dimensions existed across industries and that these culture dimensions varied more across industries than within them. The public sector and transport industry, characterized by long-linked technologies and low growth, were typically found to be detail and stability oriented rather than people and innovation oriented.

The organizational culture of the GOJ is often referred to as unique “Kasumigaseki culture,”<sup>1</sup> which cannot be seen in other countries. Nishio (2003) pointed out that Kasumigaseki culture has all four characteristics defined in **Figure 1.1** as below:

- (i) Collectivism/hierarchy: centralized authority, tradition of high respect for bureaucracy, and seniority;
- (ii) Egalitarianism: the *ringi* system,<sup>2</sup> close coordination among politicians, private sector, and bureaucrats, administrative directives, office rooms with many staff;
- (iii) Individualism: competitive entrance examinations, competition for promotions; and
- (iv) Fatalism: frequent personnel transfer of career bureaucrats, *samurai* spirits of bureaucrats.

Despite all these aspects, Nishio (2003) concluded that organizational culture of the GOJ is dominated by egalitarianism and mutuality. As a result, that the authorities often fail to function and remain indecisive in situations where decisions and actions are needed. This culture has little individualism, where innovative ideas spring out through individual choice and responsibility regardless of the social grids; rather, it can be characterized by closedness, privileges, sectionalism, centralization-fusion, and mutuality. Nishio (2003) points out from the civil-service reform perspectives that “competition of ideas” should be promoted through individualism and the surrounding culture that allows such individualism. In this regard, it can be hypothesized that weakening of the group dimension while maintaining/enhancing the weak grid dimension will enhance innovative and flexible responses of egalitarianism cultures like the GOJ’s.

Shin (2014) compared the administrative cultures in three East Asian countries (Japan, Korea, and China) and concluded that the strong legal sense and order/class consciousness in Japan’s administrative culture were unique. Suzuki (2008) noted that the inefficiency and inflexibility

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<sup>1</sup> It is named after the location of the central government headquarters (Kasumigaseki, Tokyo).

<sup>2</sup> *Ringi* refers to a unique Japanese decision-making system, where a memorandum is prepared by a person in charge and brought about for signing off by all the relevant sections and managers with red stamps/seals.

of Kasumigaseki bureaucracy had developed to minimize organizational risks associated with the potential for the ministry organizations to be headed by incapable ministers (politicians).

Absorptive capacity is the ability of an organization to recognize the value of new, external information and was introduced by Cohen and Levinthal (1990). It is critical to an organization's innovative capabilities and is largely a function of the organization's level of prior related knowledge. Zahra and George (2002) distinguished between an organization's potential and realized capacity and outlined the conditions when the potential and realized capacities can differently influence the creation and sustenance of its competitive advantage. Ishizuka (2005) focused on absorptive capacity through organizational gatekeeping of incoming information and concluded that numerous individuals should be exposed to absorb external information directly, instead of gatekeeping by a small number of individuals. This was observed to be of particular importance in a rapidly changing or highly uncertain environment.

The concepts of absorptive capacity and organizational culture are closely interlinked. Lane and Lubatkin (1998) found that one of the key absorptive capacity factors in inter-organizational learning lies in the level of management formalization. Higher levels of innovativeness in organizational cultures that emphasize learning, development, and participative decision-making are associated with a greater capacity for adaptation or absorptive capacity (Hurley & Hult, 1998). In the information technology industry, Harrington and Guimaraes (2005) found that organizational culture influences absorptive capacity as it relates to the implementation of new technologies.

Despite growing use of the concept, the study of absorptive capacity remains difficult because of the ambiguity and diversity of its definitions, components, antecedents, and outcomes (Zahra & George, 2002). Volberda, Foss, and Lyles (2010) mapped the existing terrain of research in absorptive capacity through a bibliometric analysis. They pointed out that organizational design and individual-level factors had been relatively neglected in the absorptive capacity research and that more research was required to show how such micro- and macro-level factors

would influence organizational outcomes such as competitive advantage, innovation, and performance.

Applying the concept of absorptive capacity to the assessment of the performance of public sector organizations has value through theorizing the relationships between organizational performance and knowledge processes and the broader concept of dynamic capabilities (Harvey, Skelcher, Spencer, Jas, & Walshe, 2010). Existing studies in the field of organizational change capacity focus mainly on the private sector and tend to neglect organizations in the public sector. Klarner, Probst, and Soparnot (2008) attempted to fill this gap through their studies on the organizational change capacity of the World Health Organization and found that the organization had been lacking important determinants of its change capacity.

## 1.2 Objective and Significance

Typical GOJ's organizational culture, or Kasumigaseki culture, is known to have a strong group dimension (**Figure 1.1**) and is a difficult ground for innovative and flexible responses to non-routine external requirements and expectations although innovative and flexible responses are in growing needs as called for in the GOJ's innovation policy (Cabinet Office, 2007). The objective of this dissertation is to identify the factors that can contribute to innovative and flexible responses of the GOJ to non-routine external requirements especially from the perspectives of organizational culture and absorptive capacity. Policy implications of such factors will also be presented.

Although clear and typical cultural traits exist across the GOJ organizations, each organization and its subgroups have different cultures. For example, the MLIT can be assumed to have weaker traits of individualism culture than the MOE as Chatman and Jehn (1994) pointed out that organizations with long-linked technology and low-growth are typically found to be less people and innovation oriented. Cultures and absorptive capacities also vary across sections within a ministry as well, and enabling factors for innovative and flexible responses should be studied through individual cases. As cultural and absorptive capacity studies on the public-sector organizations had been lacking (Klarner, Probst, and Soparnot, 2008), this dissertation

attempts to identify some factors from concrete cases under the unique GOJ culture to fill the gap and discuss policy implications from the cases.

The dissertation reviews six cases, where organizational cultures and absorptive capacities were found to play some key roles, and identifies factors contributing to innovative and flexible responses in relation to the GOJ's unique organizational culture and absorptive capacity. Based on the literature review, it is assumed that the following are working hypotheses for the contributing factors.

- (i) Weakening of the group and grid dimensions towards individualism (**Figure 1.1**) contributes to innovative and flexible responses under the GOJ's unique organizational culture.
- (ii) A full utilization of realized and potential absorptive capacity within organizations contributes to the effectiveness of organizational responses.
- (iii) Use of external capacity contributes to building up expertise that lacks within the organizations. Use of external experts also contributes to changes of the organizational culture.

The cases are all in the public sector, an area which lacks past studies. Building upon these case studies, the dissertation assesses the enabling factors for innovative and flexible responses from the perspectives of organizational culture and absorptive capacity, and provides policy recommendations to GOJ organizations.

### 1.3 Methodology

This dissertation reviews mainly two contrasting cases in the transport sector in which the GOJ organizations responded to external requirements and expectations. Other cases in which the MOE and the MLIT responded to external requirements and expectations are also reviewed (**Table 1.1**). In all these situations, the ministries were required or expected to respond innovatively and flexibly to meet new or emerging needs. Organizational culture and absorptive capacity play important roles when organizations need to change their normal ways

of business. Such organizational factors are examined through the case studies, and contributing factors are identified.

Examination of the case studies are based on qualitative analyses of the facts obtained through interviews and dialogues the author conducted with relevant government officials and stakeholders as well as the hands-on experience of the author. The working hypotheses in the previous section are tested through abductive reasoning in the case studies. The best possible explanations for the observed innovative or flexible responses of the GOJ organizations are derived to identify contributing factors of each case based on literature survey, interviews, dialogues, and other means.

**Table 1.1: Case Studies**

	<b>Ministry of the Environment</b>	<b>Ministry of Land, Infrastructure, Transport and Tourism</b>
Organizational characteristics and history	Relatively small, but rapidly expanding ministry. Established as the Environment Agency in 1971; upgraded to a ministry in 1999.	Traditional, long-standing organization with a large volume of administrative mandates and reporting sub-organizations. Former Ministry of Transport, Ministry of Construction, Hokkaido Development Agency, and National Land Agency were merged into single ministry in 2001. Japan Tourism Agency was established within the ministry in 2008.
Study cases	1. Transport of radioactive soil and waste to the Fukushima Interim Storage Facility	2. Adoption of road safety audits, an international good practice
	3. Formulation of the Basic Environment Law	4. Formulation of the Innovation Promotion Outline
	5. Establishment of the Carbon Tax and other responses to climate change issues	6. Reforms of national airport management through establishment of the Airport Management Reform Promotion Office

Source: Author.

#### 1.4 Structure of Dissertation

This dissertation comprises four chapters. This chapter introduces the research background, objective, methodology, and structure of the dissertation.

Chapter 2 provides the analysis of the MOE through three cases: (i) planning and implementation of the transport of radioactive soil and waste to the Fukushima ISF, (ii) formulation of the Basic Environment Law, which captured emerging environmental issues and provided various breakthroughs in environmental policy, and (iii) establishment of the Carbon Tax and responses to various climate change issues. The GOJ had assigned the MOE to respond to the unprecedented challenge of transporting radioactive soil and waste to the Fukushima ISF. Despite some concerns about its suitability and capacity, the MOE prepared transport plans and started a pilot transport project in a relatively short period. This first MOE case study includes a review of the factors responsible for the successful planning and implementation from the organizational culture and absorptive capacity perspectives.

Chapter 3 provides the analysis of the MLIT through three cases: (i) application of RSA, which is considered as an international good practice and has been adopted by many developed and developing countries, (ii) formulation of the Innovation Promotion Outline, and (iii) reform of national airports through establishment of the Airport Management Reform Promotion Office. The GOJ promotes RSA through bilateral and multilateral overseas development assistance but has not applied it to domestic road projects. The first MLIT case study reviews a pilot project in Chiba Prefecture and an ensuing nation-wide pilot program from the organizational culture and absorptive capacity perspectives.

Chapter 4 presents the research conclusions and provides policy recommendations.

## **Chapter 2**

# **Transport of Radioactive Soil and Waste to the Fukushima Interim Storage Facility and Other Experiences by the Ministry of the Environment**

The focus of this chapter is the case of the planning and implementation of the transport of radioactive soil and waste to the Fukushima Interim Storage Facility (ISF) by the Japanese Ministry of the Environment (MOE). The transport commenced in March 2015 following the decontamination works from the Fukushima Dai-ichi Nuclear Power Station disaster in March 2011. Although it was an unprecedented challenge and seemed a poor fit for a ministry with mainly regulatory functions, the MOE prepared the transport plan and smoothly conducted the initial implementation. This chapter reviews the planning and initial implementation processes mainly from the organizational arrangement perspectives. Other experiences of the MOE are also reviewed, namely formulation of the Basic Environment Law and responses to various climate change issues including establishment of the Carbon Tax.

### **2.1 Introduction**

This section reviews the planning and initial implementation processes for the transporting of radioactive soil and waste generated in the large contaminated areas off-site of the Fukushima Dai-ichi Nuclear Power Station in Fukushima Prefecture, Japan, due to the Great East Japan Earthquake and Tsunami on 11 March 2011. Such a transport was unprecedented in Japan and for the government of Japan (GOJ) in terms of its large quantity (up to 28 million m<sup>3</sup>) and the radioactive nature of the transported substance. Nuclear fuels, high-level waste, and low-level

waste are transported from nuclear power stations to treatment plants in special transport packaging, but this is mainly by sea and in smaller volumes than the soil and waste from the decontamination works. For example, the major transporter of nuclear fuels and wastes in Japan, Nuclear Fuel Transport Co., Ltd., transported 23,000 drum cans (about 0.2 m<sup>3</sup> each) of low-level waste and 288 canisters (about 0.17 m<sup>3</sup> each) of high-level waste in the peak years. In contrast, the MOE expects the transport of up to 6 million m<sup>3</sup> of decontamination soil and waste to be transported in a peak year. As the volume is large and the transport routes pass through populated areas, every action of the MOE has drawn high public concerns and media attention. This dissertation attempts to identify the factors that contributed to the smooth planning and initial implementation focusing mainly on aspects of administrative arrangement such as original experience, expertise, as well as the absorptive capacity, and the organizational culture.

Implementation arrangements to respond to unprecedented events are normally decided based on the relevance and existing capacity of the responsible organizations. The assigned organizations need to undergo changes to fulfil the tasks. Meyer, Brooks, and Goes (1990) categorized two types of changes, namely first order (adaptation) and second order (metamorphosis) changes. The first order changes are continuous and occur within a stable system, whereas the second order changes transform fundamental properties or states of the system. Harrald (2006) concluded that nonstructural factors such as improvisation, adaptability, and creativity were critical to successful problem-solving in disaster response. Lee, Bae, Oh, Hong, and Moon (2014) conducted a system analysis on organizational conflict in the post-disaster response of Hurricane Katrina and noted the importance of networking strength for the success of a response. Cohen and Levinthal (1990) labeled absorptive capacity as the ability of an organization to recognize the value of new, external information, assimilate it, and apply it. Absorptive capacity is largely a function of the organization's level of prior related knowledge and is critical to its capabilities.

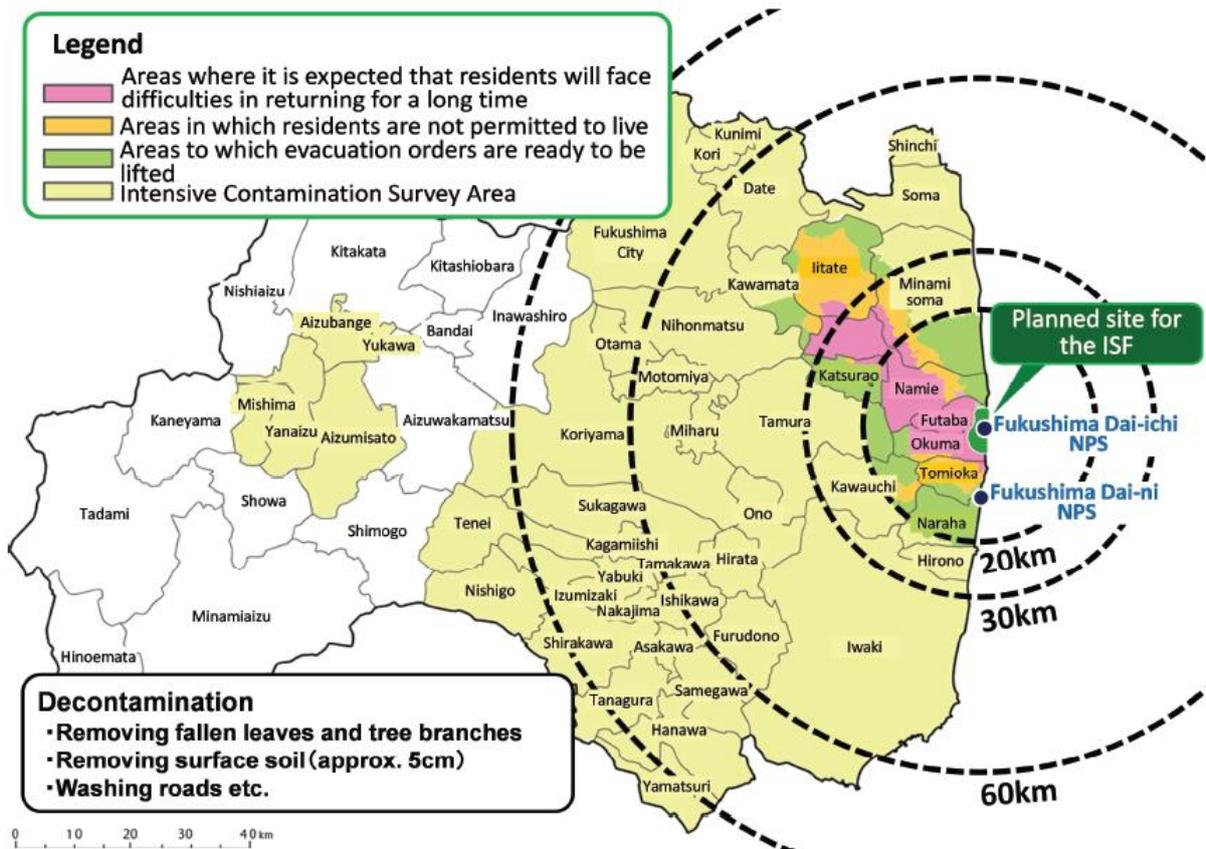
The Great East Japan Earthquake and Tsunami brought the GOJ many unprecedented challenges. Among them were the measures to be taken regarding the radioactive material

discharged by the Fukushima nuclear accident.<sup>3</sup> In August 2011, the GOJ designated the MOE as the focal agency responsible for decontamination and treatment of radioactive wastes through the “Act on Special Measures Concerning the Handling of Radioactive Pollution.” No government agency could have been a perfect match for this role in such an unprecedented event. Although the MOE had some experience and expertise related to “cleaning-up” measures, such as solid waste treatment and health-related measures like pollution control, the Japanese laws before the disaster had not anticipated a situation in which radioactive substances would be discharged into the environment. Furthermore, the MOEs previous roles had been mainly limited to the regulatory side and its direct implementation experiences had been limited to small-scale preservation works in national parks.

The designated decontamination area, in which additional exposure doses of more than 1 mSv/year were observed, spanned a wide area of eastern Japan affecting 100 municipalities in 8 prefectures. The decontamination area in Fukushima Prefecture also covered a large part of its land area (**Figure 2.1**). The MOE was designated to directly implement decontamination in 11 heavily contaminated municipalities in Fukushima Prefecture (Special Decontamination Areas), whereas municipal governments were tasked with decontamination in other areas. The soils and wastes removed by decontamination works were initially piled in temporary storage facilities or buried underground at sites like school playing fields and house gardens within each municipality.

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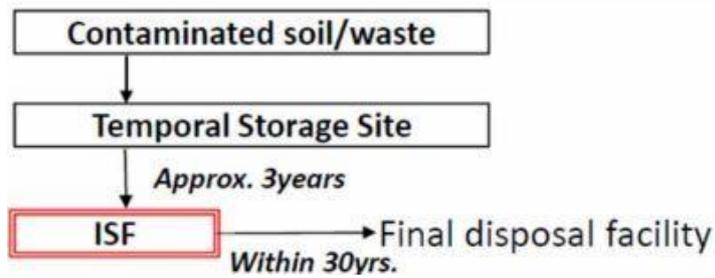
<sup>3</sup> Tanaka (2012) outlined the accident and lessons learned from the initial actions.



Source: Nishio, Kamei, Morikawa, and Ishikawa, 2016.

**Figure 2.1: Location of the Interim Storage Facility and Decontamination Areas Within Fukushima Prefecture (as of August 2013)**

The GOJ planned the ISF near Fukushima Dai-ichi Nuclear Power Station to serve as a facility that gathers radioactive soil and waste from the temporary storage sites within Fukushima Prefecture, where the highest volume of soils and wastes were concentrated. The ISF was designed to store the soils and wastes up to 30 years until they are moved to a final disposal facility (**Figure 2.2**). The MOE issued the “Basic Policy on Interim Storage and Other Facilities” (MOE, 2011) and announced that it would make the utmost efforts to put ISF into service within three years from the start of the full-scale transfer of the soils and wastes to temporary storage sites, which was commonly understood as January 2015.

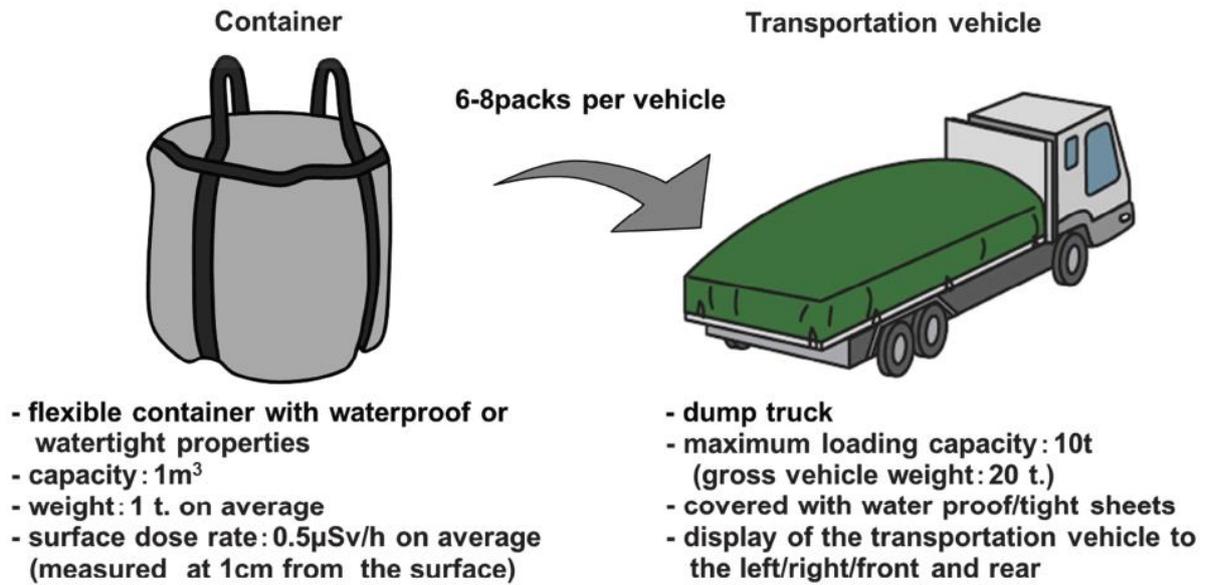


Source: International Atomic Energy Agency (2013).

**Figure 2.2: Storage and Disposal Scheme for Contaminated Soil and Waste in Fukushima Prefecture**

## 2.2 Overview of the Transport to Interim Storage Facility

The MOE estimated that the total transport volume would be up to 28 million m<sup>3</sup>, of which up to 12.5 million m<sup>3</sup> would be transported by 2020, when the Tokyo Olympic and Paralympic Games will be held (Nishio, Kamei, Morikawa, & Ishikawa, 2016). Radioactive soil and waste from decontamination were stored mostly in 1 m<sup>3</sup> plastic containers in temporary storage sites, and 10-ton loading-capacity dump trucks were planned as the transport vehicles as they were widely available (**Figure 2.3**). The transport plans drew a tremendous amount of attention from the residents, road users, municipalities, mass media, etc., due to the high volume, people's fears of radioactive substances, and public frustration related to the Fukushima Dai-ichi accident and the government's countermeasures.



Source: Nishio, Kamei, Morikawa, and Ishikawa, 2016.

**Figure 2.3: Transport Methods for the Radioactive Soil and Waste**

Preceding the transport planning and implementation, the ISF construction plan was discussed and negotiated with the local municipalities and residents. The MOE proposed an initial plan in March 2012. The Fukushima prefectural government accepted the MOE’s initiation of onsite surveys in November 2012 and established an Experts Panel on the ISF in April 2013. The MOE tried to meet the initial target of starting the ISF operation in January 2015 while the local governments and residents often criticized the MOE and GOJ on their hurried approaches.

The MOE started the official transport planning process by organizing the “Working Group on Transport of Soil and Waste to the ISF” in December 2013. The working group was headed by a transport expert and included environmental and radiation experts and a local opinion leader. The main objective of the working group was to discuss the basic framework of the transport plan. The working group meetings were open to the mass media, and they were reported in substantial details by major media in Fukushima, Tokyo, and elsewhere. The working group’s chairperson made it clear in the first meeting that the MOE should “take all possible actions without making any taboos or assumptions” to gain public and local governments’ support (MOE, 2013). The MOE was expected to take extremely quick decisions and flexible actions

with careful consideration to the public reactions in order to commence the transport in accordance with the GOJ's target timeframe.

On 1 September 2015, the Fukushima Governor accepted the construction of the ISF. However, he explicitly announced that the acceptance was limited to construction of the ISF and not extended to transport of soil and waste into the ISF. He demanded that five measures be confirmed before the commencement of transport, including the national provision of maintenance and periphery measures along the transport route and guaranteed safety in relation to the ISF development and transport.

The working group proposed the basic framework for transport in September 2014 after four rounds of meetings. The MOE held a consultation meeting with Fukushima Prefecture, all its municipal governments, and relevant agencies and issued the "Basic Plan for Transport of Soils and Waste to the ISF" in November 2014 (MOE, 2014). The Basic Plan comprised the following contents:

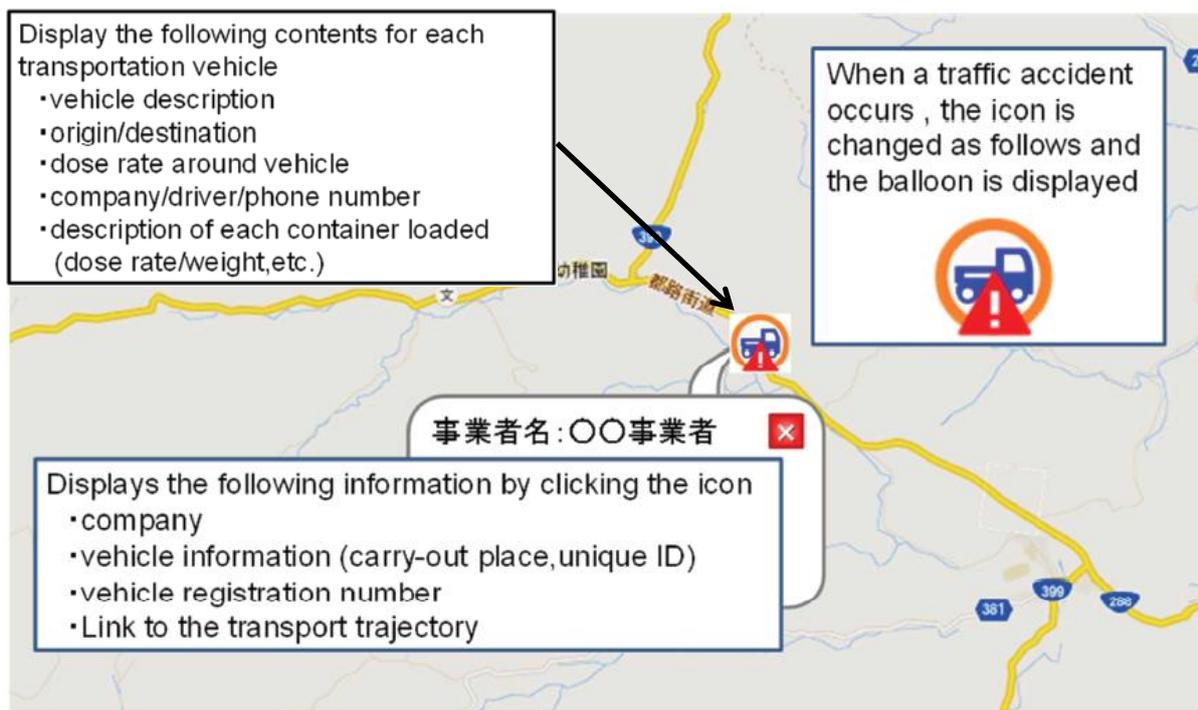
- (i) basic principles are to implement transport: (a) safely and securely, (b) promptly and smoothly, and (c) with public understanding and relevant agencies' cooperation;
- (ii) transport volume, contents, implementing body, methods, etc.;
- (iii) basic policies are: (a) integrated management, (b) promote overall reconstruction of Fukushima Prefecture, (c) ensured safety of the residents and minimized environmental impact, (d) full use of expressways, (e) concentrated transport and use of large vehicles, (f) prepared response for accidents and other unexpected events, (g) monitoring and risk communication, (h) promotion of public understanding; and
- (iv) necessary measures towards the implementation are: (a) preparation of an implementation plan, (b) proper demarcation of responsibilities among relevant agencies, (c) enhancement of cooperation among relevant agencies, (d) implementation of pilot transport, (e) road and traffic measures, (f) training of the drivers and site workers.

The Implementation Plan for fiscal year (FY) 2014–2015 was issued in January 2015 after two more rounds of consultation meetings with the municipalities (MOE, 2015a). The Implementation Plan included the transport route totaling 1,600 km (**Table 2.1**) and assessment and monitoring plans along the route. As a means to enhance risk communication and management, the transport vehicles and containers would be monitored throughout the transport, and sufficient information would be disclosed (**Figure 2.4**).

**Table 2.1: Transport Routes by Road Category**

Road category	Transport routes (km)
National expressways, automobile highways (access controlled)	400
National highways	500
Other highways and roads	700
<b>Total</b>	<b>1,600</b>

Source: Nishio, Kamei, Morikawa, and Ishikawa, 2016.



Source: Nishio, Kamei, Morikawa, and Ishikawa, 2016.

**Figure 2.4: Management of Transport Vehicles and Containers**

The initial transport started in March 2015 as a pilot project planned for about one year; this was only two months behind the original target commencement date, despite the high level of difficulty. The working group assessed the results of the pilot transport project in December 2015 and concluded that it had been largely smooth and without major problems (MOE, 2015b).

### 2.3 Factors for Smooth Planning and Initial Implementation

Some government officials noted in interviews<sup>4</sup> that the MOE could not be a good match for the task of transporting the soil and waste to ISF as it: (i) had not been responsible for the nuclear disaster, (ii) had no experience in direct implementation of large public works projects, and (iii) was not an administrative agency for the transport sector. A local newspaper in its

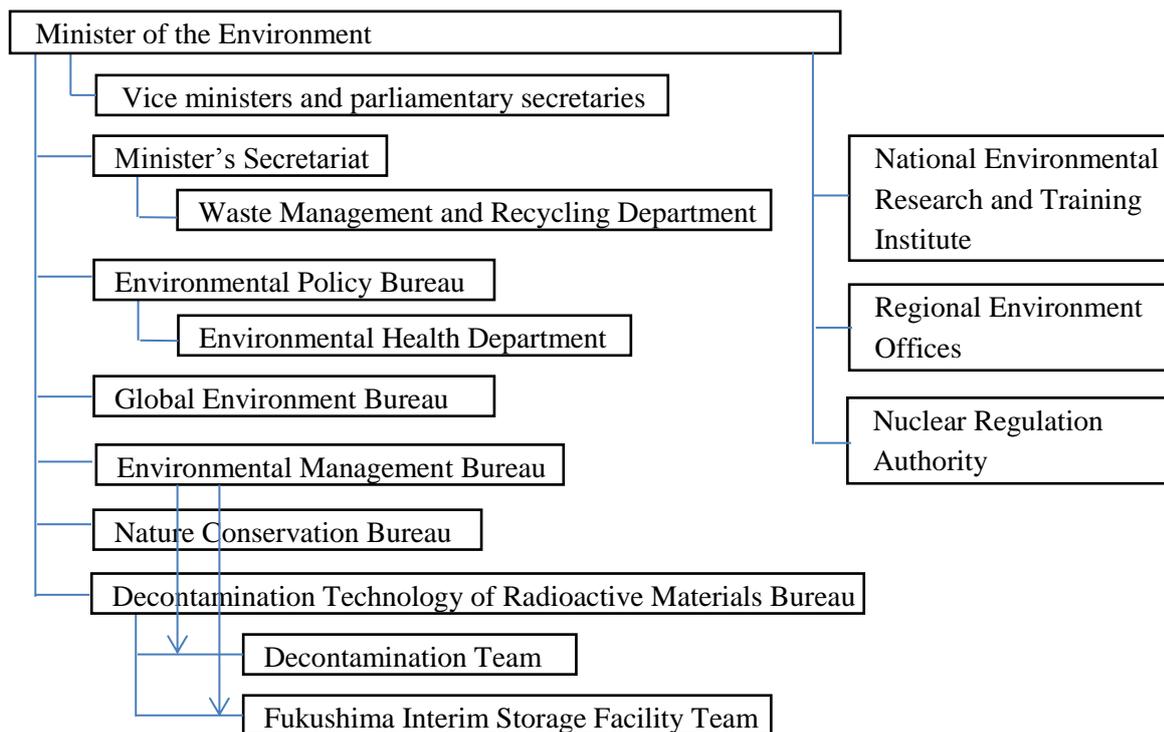
<sup>4</sup> Based on interviews with management-level staff of the Reconstruction Agency on 23 January 2015 in the Reconstruction Agency headquarters in Tokyo, and with management-level staff of the MLIT on 21 October 2014 in the MLIT headquarters in Tokyo, and management-level staff of the MOE on 20 February 2015 in the MOE headquarters in Tokyo.

series to commemorate five years after the disaster, raised anxieties that: (i) the MOE might have its limitations as the lead agency because it is not a responsible ministry in the fields of establishing and implementing ISFs and (ii) other ministries such as the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) could not further enhance their cooperation through the means as seconding more experts due to increasing their own mandates and limited personnel resources (Fukushima Minpo Newspaper 2016). Despite such challenges, the MOE prepared the basic plan and the first implementation plan by January 2015 and commenced the transport in March 2015 without much deviation from the original schedule. The MOE completed a pilot project transporting 45,382 m<sup>3</sup> radioactive soil and waste from 43 municipalities in the FY 2015 smoothly and without major problems.

This section reviews the factors that contributed to the MOE's sound planning and smooth initial implementation despite the vast challenge.

### 2.3.1 Expertise from the Original Mandates

The MOE, formerly the Environment Agency, was established in 1971 (upgraded to the MOE in 2001) in response to serious pollution-related diseases caused by Japan's rapid industrialization. The MOE's original mandates before the Fukushima accident comprised mainly: (a) global environment, (b) waste management and recycling, (c) air, water, soil, and ground environment regulation, (d) health and chemicals, and (e) national parks management. Its current organizational structure is shown in **Figure 2.5**. The mandate for waste management was transferred from the Ministry of Health to the MOE when the former Environment Agency was upgraded to the MOE in 2001.



Notes: As of Dec 2016; divisions, offices, and teams, except for the ones related to the Fukushima Dai-ichi accident, were omitted.

Source: Author, based on MOE's website.

**Figure 2.5: Organizational Structure of the Ministry of the Environment**

Large scale pollution-related diseases, including the internationally notable Minamata Disease, became a large social concern during the rapid industrialization of Japan in the 1960s, and the Environment Agency was established in 1971 to deal with the disasters created by pollutants from industrial activities. There are similarities between the pollution-related diseases and the Fukushima nuclear disaster in the sense that they both: (i) affected a large number of people spread across wide regions, (ii) attributed the primary responsibilities to companies' industrial activities, and (iii) caused considerably large public unrest. It seems too distant in the past to be counted as relevant experience, but the MOE staff noted in interviews that the ISF team and its transport unit had regular coordination meetings with the Environmental Health Department, which is still in charge of Minamata disease and other pollution-related diseases, and shared

know-how, especially in risk management and communication.<sup>5</sup> The interviewed staff noted that this coordination greatly enhanced the risk management aspects of the transport planning and implementation as the public had high anxiety about the health effects of radioactive soil and waste.<sup>6</sup> This can be seen as a use of the MOE's potential absorptive capacity, which may have been overlooked when the task was assigned to the MOE. The absorptive capacity was enhanced by active coordination and information exchange within the MOE, which was encouraged by the MOE's organizational culture that will be reviewed in the next section.

In terms of absorptive capacity, the MOE had other expertise from its original mandates related to the transport to the ISF. The MOE handled transport of polychlorinated biphenyl (PCB) wastes through the Japan Environmental Storage & Safety Corporation (JESCO, formerly Japan Environmental Safety Corporation)<sup>7</sup>, a special company under the MOE. JESCO was responsible for the implementation of treatment and transport of PCB wastes under the MOE's oversight. PCBs were produced and used in throughout the country until 1972, when the production and distribution was banned. PCB waste was transported by licensed companies to JESCO's treatment facilities following technical guidelines set by the MOE. The MOE assigned JESCO to be responsible for a major role in the integrated transport management for the transport to the ISF (**Figure 2.6**) because JESCO had acquired expertise in the safe transport and monitoring of hazardous materials through their management of PCB waste (Sugiura 2014).

JESCO's experience and expertise were well utilized in establishing and implementing the monitoring systems for transporting vehicles and containers as noted in the Implementation Plan (MOE, 2015a). According to MOE staff, discussions were often held between the relevant MOE staff and JESCO staff from the preparation stage of the basic and implementation plans

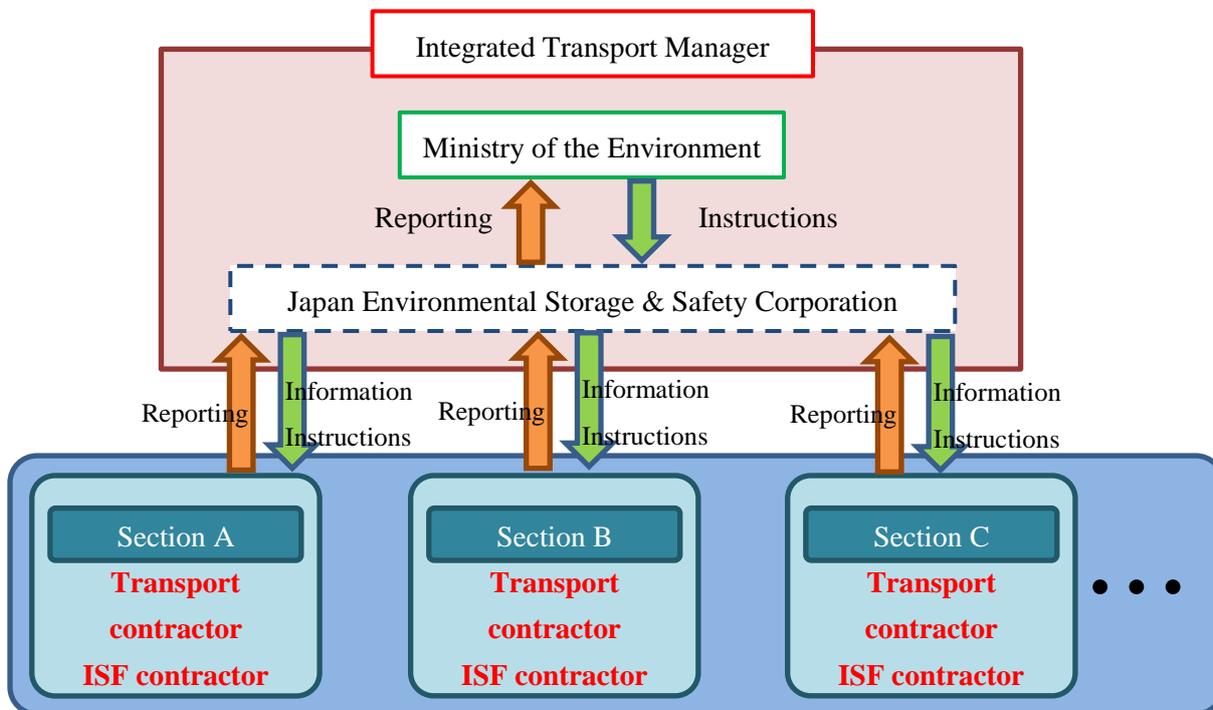
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<sup>5</sup> Based on the interviews with the MOE staff on 9 May 2016 in the MOE headquarters in Tokyo. The coordination meetings were chaired by the Administrative Vice Minister.

<sup>6</sup> In addition to the interviewed staff in footnote 5, other managerial-level MOE staff also noted this point in the interview on 13 November 2014 in the MOE headquarters in Tokyo.

<sup>7</sup> The company name was changed in December 2014 and officially tasked with the ISF related matters, when Japan Environmental Safety Corporation Act was revised to Japan Environmental Storage and Safety Corporation Act.

even before JESCO was officially tasked to the ISF matters.<sup>8,9</sup> The MOE’s expertise in PCB treatment was considered as realized absorptive capacity as the government considered its use from the time when the decontamination task was assigned to the MOE (Sugiura, 2014).



Source: “Implementation Plan for Transport of Soil and Waste to the ISF in fiscal years 2014–2015”.

**Figure 2.6: Structure of Integrated Transport Management**

As described above, the MOE’s original experiences and expertise were used particularly in (i) risk management and communication and (ii) monitoring of transport vehicles and containers. The MOE monitored radiation dose rates and other environmental indicators along the transport routes and disclosed these publicly. Additionally, transport containers and vehicles were individually tagged and checked for their contamination levels, locations, etc. The MOE and municipal governments established information centers in major locations such as municipal government offices and train stations. Such risk communication and management measures were necessary to cope with public fears related to the unknown risks of nuclear

<sup>8</sup> Based on the interviews with the MOE staff on 9 May 2016 in the MOE headquarters in Tokyo.

<sup>9</sup> Footnote 7.

hazards<sup>10</sup>, as the local residents were highly sensitive about the invisible risks of radioactive substances and skeptical regarding the information provided by and actions of the Tokyo Electric Power Company and GOJ on the causes and handling of the nuclear disaster. Moreover, a majority of the public associated the MOE with protection of the environment and preservation of national parks, and this perception was advantageous in obtaining public support compared to the public's perceptions of other agencies directly responsible for the nuclear disaster.

In summary, the following has been identified as factors contributed to successful planning and initial implementation of transport to the ISF in the section: (i) realized absorptive capacity (JESCO's expertise) was utilized and (ii) unexpected potential absorptive capacity (experience from pollution-related diseases) was utilized.

### 2.3.2 Organizational Culture and Capacity Enhancement

Original experience and expertise mainly contributed to mitigating the public fears about the unknown risks of nuclear hazards through use of realized and potential absorptive capacities. However, there were also doubts over the MOE's capacity to plan and implement a large-scale transport project. This section reviews the organizational culture of the MOE and its capacity enhancement through the initial experience of directly implementing the decontamination measures.

The MOE became responsible for the decontamination of radioactive pollution when it was assigned the mandate through the GOJ's act in August 2011. Although the decontamination and ISF were handled by separate teams, the two teams both report mainly to the director generals of the Environmental Management Bureau and Decontamination Technology of Radioactive Materials Bureau (**Figure 2.5**). The teams worked closely under the common

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<sup>10</sup> Local government officials repeatedly requested such measures in the coordination meetings and other occasions according to MOE staff (interview on 9 May 2016 in the MOE headquarters in Tokyo).

management and through frequent coordination meetings at various levels.<sup>11</sup> In the headquarters, the two teams had been physically placed next to each other and were merged into one large room in early 2015. The MOE established the Fukushima Office for Environmental Restoration in Fukushima City in January 2012 to enhance implementation and local coordination capacity. The Fukushima Office also had both decontamination and ISF functions and acted as a common focal point in dealing with local governments and residents. MOE staff noted that such organizational arrangements enabled the MOE to smoothly transfer the capacity acquired through direct implementation of the decontamination works to support the tasks on the ISF and its transport planning.<sup>12</sup>

In addition to the capacity enhancement through direct implementation, it was found through the interviews<sup>13</sup> that the MOE's organizational culture played an important role in taking "all possible actions without taboos and assumptions" as the working group's chairperson had requested in the first meeting in 2013 (MOE, 2013).

The MOE identified cooperation from other ministries as the most important factor for a quick start to the decontamination works (MOE, 2016a). The MOE had little experience and expertise in direct implementation of transport projects, as it had been mainly a regulator and not a project planning or implementation organization. Its main function in transport was to review and provide opinions to environmental impact assessments of projects. The MLIT, on the other hand, was the key agency with transport sector expertise and project implementation capacity. Therefore, the MOE requested the MLIT to provide secondees to enhance its implementation capacities, and key positions like the director general for Decontamination Technology of Radioactive Materials Bureau, director-level positions in Decontamination Team and Fukushima ISF Team (**Figure 2.5**) were allocated to MLIT secondees. Also, a section chief

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<sup>11</sup> MOE staff noted that coordination meetings were held among relevant deputy director level staff from ISF, decontamination, and other relevant departments about every two weeks in the headquarters and among director general and director level about every month in Fukushima Office (interview on 9 May 2016 in the MOE headquarters in Tokyo).

<sup>12</sup> Interview with management-level staff of the MOE on 20 February 2015 in the MOE headquarters in Tokyo.

<sup>13</sup> Footnote 5.

position for the ISF Transport Unit within Fukushima ISF Team was created in 2014 and taken by a secondee from the MLIT.

In addition to the secondment arrangement with the MLIT, the MOE used a relatively large number of experts from private sector in response to increasing needs related to the Fukushima nuclear disaster. The GOJ started promoting exchange of expertise between the public and private sectors in 1999, when Act on Personnel Exchange Between the Government Sector and Private Enterprises was enacted. The act was revised in 2006 to further promote employment from the private sector by reducing some restrictions. The MOE had a relatively high number of staff recruited from the private sector with 45 staff (3.5% against the allocated total number of staff) already in the FY 2011, when the Fukushima nuclear disaster happened (**Table 2.2**). Furthermore, the number increased to 605 (20.5% against the total) in FY 2016. The ISF Transport Team in the headquarters comprised six staff, and majority (four out of six) was from the private sector with only one originally from the MOE. MOE's management-level staff recognized that use of these external experts was vital to smooth planning and initial implementation of transport to the ISF.<sup>14</sup>

**Table 2.2: Number of Staff Recruited from the Private Sector**

	FY 2011 (=A)	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016 (=B)	Increase (= B-A)
MOE	45 (3.5%)	166 (8.3%)	316 (11.2%)	470 (17.0%)	587 (20.1%)	605 (20.5%)	560 (17.0%)
MLIT	324 (0.5%)	411 (0.7%)	446 (0.8%)	500 (0.9%)	516 (0.9%)	546 (0.9%)	222 (0.4%)
Reconstruction Agency	-	39 (33.1%)	54 (32.0%)	58 (31.7%)	60 (31.4%)	51 (25.9%)	51 (25.9%)
GOJ Total	4,152 (1.4%)	4,167 (1.4%)	4,213 (1.4%)	4,690 (1.6%)	4,969 (1.7%)	5,245 (1.8%)	1,093 (0.4%)

FY = fiscal year, GOJ = Government of Japan, MLIT = Ministry of Land, Infrastructure, Transport and Tourism, MOE = Ministry of the Environment.

Notes: The numbers of staff are as of 1 October of each year.

The numbers in parentheses are ratio of the externally-recruited staff against the total number of the staff.

Source: Cabinet Secretariat (2017).

<sup>14</sup> Based on interviews with management-level staff of MOE (non-secondees) on 18 March 2015 in Tokyo.

What are the organizational culture characteristics of the MOE, and what roles did they play in the ISF transport planning and implementation? The GOJ ministries are notorious for their strong sectionalism as pointed out in various literatures.<sup>15</sup> That is especially true in a big ministry like the MLIT which has a substantial amount of vested authority and a large budget. In contrast, the MOE, at least until the Fukushima-related works, had been considered a relatively new and small ministry (**Table 2.3**). Not surprisingly, the two ministries had contrasting organizational cultures. Management-level secondees from the MLIT to the MOE noted in the interviews that there are major differences in the organizational cultures of the two ministries as following: (i) junior staff in the MOE often come directly to high-level management staff such as director generals for briefing and discussion without the middle managements while junior staff in the MLIT need to go through hierarchy of section chiefs, deputy directors, directors, deputy director generals, etc. before reaching director generals and above; (ii) information is generally more frequently shared with the politically-appointed managers (the Minister, Vice Ministers, and Parliament Secretaries) in more detail in the MOE, and such high-level managers more directly interact with staff; (iii) information sharing and discussions within the MOE are very open, often shared through emails among relevant sections regardless of the staff ranks; and (iv) MOE-proper staff<sup>16</sup> are generally friendly to secondees and other external staff and value their respective expertise in required fields.<sup>17</sup> They noted that the MOE generally had a friendly atmosphere and flat decision-making structure, and such an atmosphere promoted a smooth and productive work environment especially for the secondees and externally recruited staff. Some interviewees also noted that some of the above characteristics are unique to the sections related to decontamination and ISF due to the unprecedented challenges, urgency, and high-level commitment of the government on the

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<sup>15</sup> For example, Nishio (2003).

<sup>16</sup> “Proper staff” here refers to those who were recruited in the MOE from the beginning of their career as opposed to those who were either seconded from different ministries and companies or recruited as mid-career experts. Most of the central government officials in Japan are recruited soon after graduation from schools and employed for their entire career lives.

<sup>17</sup> Based on interviews with managerial-level staff of the MOE, who were in charge of decontamination and ISF matters, on 20 February 2015 and 13 November 2014 in the MOE headquarters in Tokyo.

Fukushima-related issues although these characteristics generally reflect the overall organizational culture of the MOE.

Since its establishment, a substantial number of the MOE’s management and other staff included secondees and transferred staff from different ministries and agencies, which include the Ministry of Health, Labor and Welfare, the Ministry of Finance (MOF), and MLIT. The position of administrative vice minister of the MOE, the top-level bureaucratic post (except for political appointees), was often taken by secondees or staff transferred from other ministries. In addition, the number of staff rapidly increased after the Fukushima accident, from 1,299 in FY 2011 to 2,953 in FY 2015, more than doubling within the first three years, whereas the numbers of employees in the whole GOJ and other large ministries like MLIT were in a decline (Table 2.3).

**Table 2.3: Allocated Number of Staff in Relevant Government Organizations**

	FY 2011 (=A)	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016 (=B)	Increase (= B–A)
MOE	1,298	2,010	2,814	2,762	2,920	2,953	1,655
MLIT	60,222	59,763	59,466	59,054	58,815	58,573	-1,649
Reconstruction Agency	-	118	169	183	191	197	197
GOJ Total	301,058	299,758	298,341	297,340	297,091	296,766	-4,292

FY = fiscal year, GOJ = Government of Japan, MLIT = Ministry of Land, Infrastructure, Transport and Tourism, MOE = Ministry of the Environment.

Note: All the numbers are allocation at the end of each FY.

Source: Cabinet Secretariat (2016).

As a relatively new and small agency with staff from various career backgrounds, the MOE had developed a culture of openness and flat decision-making. Unlike GOJ’s general organizational culture typically observed in large and long-lasting agencies, the MOE had relatively higher individualism culture with weak grid and group dimensions. Such cultural traits were inevitably enhanced in Fukushima-related matters due to a large influx of external experts and the nature of the tasks as unprecedented challenges, urgency, and high-level commitment of the government. In other words, the group and grid dimensions in **Figure 1.1**

were further weakened to create higher levels of individualism, where externally recruited staff could work smoothly, fully being able to utilize their expertise in respective fields without much conflict with the existing staff.

As noted in the interviews with the management-level staff, such an organizational culture supported MOE's existing and externally-recruited staff considerably in facing the unprecedented challenges and the high media and public attention to the ISF. New conditions had continuously been set by local governments based on critical public opinions. The MOE needed to respond with new and innovative approaches that required very quick decision-making on various occasions. Conventional bureaucratic approaches, where lots of so-called "red tape" hampers quick responses, would likely not have worked effectively in such circumstances.

In summary, the following were identified as enabling factors for flexible responses of the MOE in successful planning and initial implementation of the transport to the ISF:

- (i) realized absorptive capacity (JESCO's expertise) was utilized;
- (ii) unexpected potential absorptive capacity (experience from pollution-related diseases) was utilized;
- (iii) a large number of external staff members and their capacity were well utilized;
- (iv) a friendly and open atmosphere and flat decision-making structure, where the grid dimension is weakened, and such an atmosphere promoted a smooth and productive work environment; and
- (v) higher individualism culture with the weak group dimension supported flexible responses of MOE's existing and externally-recruited staff.

## **2.4 Other Experiences by the Ministry of the Environment**

This section reviews two other cases in which the MOE responded to external requirements and expectations. These cases are analyzed mainly to verify the factors identified in the main case of the MOE (Sections 2.1–2.4).

### 2.4.1 Basic Environment Law

Japan faced a number of domestic and global environmental issues in the early 1990s, such as municipal and industrial waste management, nitrogen oxides, conventional water pollution, climate change, and environmental aid (Organisation for Economic Co-operation and Development [OECD], 1994). In response to such issues, the Environment Agency formulated the Basic Environment Law, which was adopted in 1993. In response to the United Nations Conference on Environment and Development (UNCED) held in June 1992, the Basic Environment Law set forth the GOJ's basic principles in the environmental policy, responsibilities of various social bodies, and basic programs to the world as a global pioneer (Masuhara, 1993a).

The Basic Environment Law enhanced the Environment Agency's strong capacity in conventional environmental issues and expanded the mandate to include emerging issues. Since its establishment in 1971, the Environment Agency's main administrative tool had been regulations, typically through laws such as the Basic Law for Environmental Pollution Control (adopted in 1967) and the Nature Conservation Law (adopted in 1972). By the early 1990s, Japan's rapid economic development created new environmental issues such as urban, non-industrial wastes. Global environmental concerns also arose, such as the depletion of the ozone layer, global warming, degradation of tropical rain forests, and extinction of endangered species. Regulating through the conventional statutory mechanisms became insufficient, and alternative measures such as economic approaches and environmental impact assessments (EIAs) were expected (Masuhara, 1993b). The Basic Environment Law provided various breakthroughs for new measures and became a turning point for Japan's environmental policies (Matsushita, 2014).

From the organizational culture and absorptive capacity perspectives, what were the factors that contributed to creating such a breakthrough and turning point? National government officers have strong motivation to formulate a new law, and the meritorious persons who actually contribute to the formulation of a cabinet law are widely recognized within concerned ministries, and they will have a greater chance for promotion or better jobs after retirement.

However, the Environment Agency appointed an external staff from the MOF as the director of the law formulation office and assembled 27 staff from various departments in the agency to be the office members (R. Fujikura, Nakayama, & M. Fujikura, 2016).

The director was transferred from the MOF in 1992, when the law formulation office was established. Although the senior management of the agency was dominated by secondees because it had only been 21 years since its establishment, a new secondee from an external organization must have functioned as a catalyst to bring in new ideas. Also, establishing an ad hoc office with a substantial number of staff must have been challenging for a small organization like the Environment Agency at that time. Several MOE staff members noted in interviews that it has been one of the MOE's personnel management style to manage its staff flexibly through what they informally call "staff hunting."<sup>18</sup> The managers search for appropriate staff members and appoint them through joint-appointments to the ad hoc team in addition to their original mandates, which makes easier and faster to create ad hoc teams than officially creating new posts and appointing staff full-time. A management-level staff noted that the MOE, having been relatively small in size, had a culture of openness and respect to individual staff member's initiatives regardless of their origins and that such openness must have supported utilization of diverse individual ideas within the agency.<sup>19</sup>

Another factor was effective use of absorptive capacity and avoidance of sectionalism through experts' councils and top-down political decision-making. The Environment Agency expected that it would be difficult to obtain consensus through the ordinary procedure whereby officers of the agency independently obtained consent from each of the concerned ministries such as the Ministry of International Trade and Industry (MITI, later the Ministry of Economy, Trade and Industry [METI]), the Ministry of Construction, and the Ministry of Transport (both of them later merged to form the MLIT). To address this issue, the agency established a small committee that included members nominated by the concerned ministries. These other ministries provided their input through their representatives on the committee. All discussions

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<sup>18</sup> Interviews with MOE's deputy director level staff members on 9 May 2016 in the MOE headquarters in Tokyo and on 23 Feb 2017 in Manila.

<sup>19</sup> Interview with MOE's director general level staff member on 27 October 2014 in Tokyo.

and reconciliations were conducted within the committee meetings (R. Fujikura, Nakayama, & M. Fujikura, 2016). In this way, absorptive capacity was enhanced by gathering expertise from other ministries and stakeholders. Also, along with reconciliation within the government, two big-named politicians created the basic concepts of the law behind closed doors, which led to an announcement by the Prime Minister to formulate a new law appropriate to the global environmental era (R. Fujikura, Nakayama, & M. Fujikura, 2016). The MOE leveraged external decisions, inputs from external committees, and political power to enhance its absorptive capacity and overcome sectionalism to formulate a breakthrough law.

In summary, the following can be identified as contributing factors for successful establishment of the Basic Environment Law:

- (i) open organizational culture created through flexible personnel appointments supported utilization of diverse individual ideas; and
- (ii) capacity of external staff and committee was utilized.

#### **2.4.2 Climate Change and Carbon Tax**

Responses to global warming and climate change<sup>20</sup> were new external requirements that emerged in the late 1980s. The United Nations (UN) Framework Convention on Climate Change was adopted in the UNCED in 1992. The Environment Agency took the lead in the Japanese response to these issues through the formulation of the Basic Environment Law, although other ministries such as MITI and the Ministry of Foreign Affairs were also interested in the issue (R. Fujikura, Nakayama, & M. Fujikura, 2016). Japan ratified the Framework Convention in 1993, and the convention became effective in 1994. The third Conference of the Parties (COP3) was held in Kyoto, Japan in 1997, and the Kyoto Protocol, which addressed greenhouse gas reduction targets during the 2008–2012 period, was adopted.

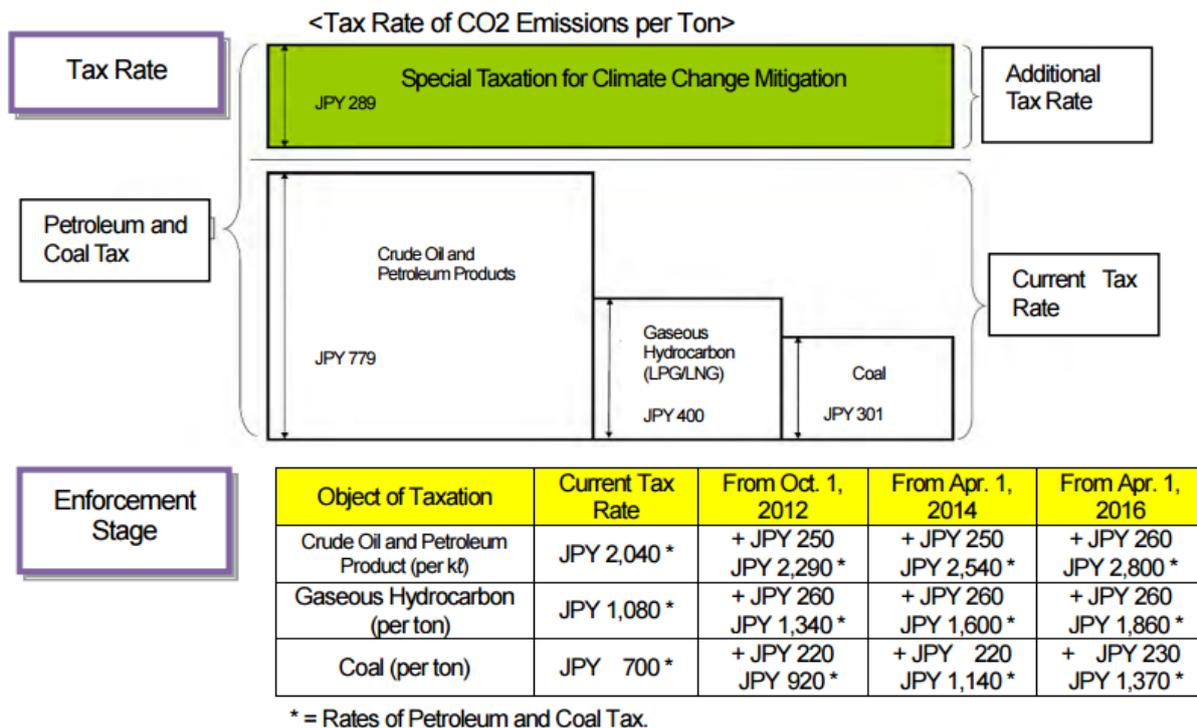
The MOE led various initiatives after it took charge of the climate change issues. The Act on Promotion of Global Warming Countermeasures was adopted in 1998 (the MOE is the responsible ministry together with METI and public works ministries and agencies). “Cool and

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<sup>20</sup> Hereafter, global warming and climate change are called “climate change” unless distinction is needed.

Warm Biz” and “Team Minus 6%” campaigns successfully contributed to raising people’s awareness of climate change issues, and similar campaigns were introduced in the UN headquarters and other countries (United Nations University, 2008). The MOE also intended to include climate change within its jurisdiction to introduce an economic instrument that drew attention as an effective measure of mitigation in the Basic Environment Law (R. Fujikura, Nakayama, & M. Fujikura, 2016).

Starting in 2003, the MOE conducted studies and worked to introduce a new tax until the Tax for Climate Change Mitigation (hereafter referred to as “Carbon Tax”) was finally adopted in 2012. Article 22 of the Basic Environment Law stipulated economic instruments, and it served as the basis for introduction of the Carbon Tax. The Carbon Tax initially came into force on 1 October 2012, and the rate was gradually increased until 1 April 2016 (**Figure 2.7**). The total revenue was estimated at JPY 39.1 billion for the first year and JPY 262.3 billion for the normal years (MOE, 2012). The Carbon Tax is not an earmarked special purpose tax, per se, but all the revenue is managed under the Energy Measure Special Account (Energy Demand Count) and allotted to energy-oriented CO<sub>2</sub> emissions restraint measures (Ito, 2012).



Source: MOE (2012).

**Figure 2.7: Tax Rate and Enforcement Stage of the Carbon Tax**

The process of introduction of the Carbon Tax included multiple hurdles involving various stakeholders and provides interesting perspectives on the organizational culture and absorptive capacity of the ministry. The MOE (and the former Environment Agency) first initiated studies regarding an environment tax in the early 1990s through the Workshop on Environmental Taxes (1991–1994), the Workshop on Economic Instruments like Environmental Taxes and Charges (1994–1997), the Workshop on Utilization of Economic Instruments in Environmental Policy (1998–2000), and the Central Environment Council (2001–). It is obvious that these long-term studies and repeated unsuccessful attempts to introduce the tax gradually built up the potential absorptive capacity of this relatively small organization including capacities to manage various stakeholders. The MOE had been cautious in its proposal due to strong opposition from the METI and industry groups, and the resulting low tax rate was suspected to be insufficient to create effective emission reduction incentives (Shiina, 2006). The first submission of the Carbon Tax request to the MOF was in August 2003. The MOE’s proposal has been characterized by low-rates and special purpose usage—the tax rate was set relatively

low (JPY3,400 per ton of carbon in the initial proposal), and the revenue (JPY 950 billion estimated in the initial proposal) was to be earmarked for climate change measures. The tax rate has gradually been decreased further during the intervening years with the rates being developed in coordination with various stakeholders.

The major stakeholders in the introduction of the Carbon Tax and their positions can be summarized as in **Table 2.4**. Within the GOJ, the MOE and the Ministry of Agriculture, Forestry and Fisheries (MAFF) shared a common interest in using the tax revenue for climate change measures, including reforestation, and two ministries co-submitted the proposals in August 2004. The MOF welcomed new revenue sources but placed a higher priority on raising the consumption tax rate as the resulting revenue increase was much higher (the consumption tax rate was raised from 3% to 5% in April 1997 and to 8% in April 2014). Although the MOF was supposed to be neutral as the appraisal ministry, Aoki and Suzuki (2007) pointed out that a considerable number of secondees from the MOF to the MOE functioned favorably for introduction of the Carbon Tax in practice. Similarly to the case of the Basic Environment Law in Section 2.4.1, utilization of external staff functioned favorably in this case. The MLIT also held a relatively neutral position as its largest interest had been maintaining the earmarked road-related taxes during the early years of carbon tax discussions.<sup>21</sup> The MOE, being also aware that the road-related taxes had been highly politically sensitive, acted flexibly to avoid inclusion of those taxes in its proposal instead of trying to achieve high impact and revenue (Aoki & Suzuki, 2007).

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<sup>21</sup> The earmarked road-related taxes were abolished in 2009.

**Table 2.4: Major Stakeholders in the Introduction of the Carbon Tax**

Pro-Carbon Tax		Coordinators/Neutral	Anti-Carbon Tax
Low rate/special purpose	Revenue neutral		
<ul style="list-style-type: none"> <li>- MOE</li> <li>- MAFF</li> <li>- LDP Environment Committee</li> <li>- LDP Agriculture Committee</li> </ul>	<ul style="list-style-type: none"> <li>- Japan Association of Corporate Executives</li> <li>- JACSES (environmental NGO)</li> <li>- DPJ</li> </ul>	<ul style="list-style-type: none"> <li>- MOF</li> <li>- MLIT</li> <li>- Government Tax Commission</li> <li>- LDP Research Commission on the Tax System</li> </ul>	<ul style="list-style-type: none"> <li>- METI</li> <li>- LDP Economy and Trade Committee</li> <li>- Japan Federation of Economic Organizations</li> </ul>

DPJ = Democratic Party of Japan, JACSES = Japan Center for Sustainable Environment and Society, LDP = Liberal Democratic Party, MAFF = Ministry of Agriculture, Forestry and Fisheries, METI = Ministry of Economy, Trade and Industry, MOE = Ministry of the Environment, MOF = Ministry of Finance, NGO = non-governmental organization

Source: Author, based on Aoki and Suzuki (2007).

The largest opposition within the GOJ was from the METI (and former MITI). The METI opposed the Carbon Tax mainly because the ministry (i) was representing the negative opinions of domestic industry, which was likely to shoulder the financial burden, and (ii) did not want the MOE to interfere with the METI's mandates for energy policies and related earmarked tax revenues. This is a typical example of the strong sectionalism of the GOJ, where ministries vigorously protect their existing jurisdictional territories. In 2002, the METI introduced "greening" taxation, applying new taxes on coal and increasing budget allocations to new energies and energy efficiency enhancement measures, and shared the lead ministry responsibility with the MOE. This was considered the METI's attempt to maintain its lead role and protect the energy earmarked budget by creating a de facto environmental tax with the MOE (Aoki & Suzuki, 2007). The MOE officials had various views on whether or not to accept the METI's proposal. In the end, a memorandum was signed between the MOE and the METI ministers confirming that carbon taxes should be different from the green taxation under the energy special account (Yamaguchi, 2016). However, this funding arrangement, where subsidies and grants are provided through the energy special account, became the basis for allocation of the Carbon Tax revenue when the tax was introduced in 2012. Initially, the MOE was criticized for insufficient implementation capacity with multiple incidents of overlapping subsidies and implementation stagnation (Aoki & Suzuki, 2007). However, the MOE has gradually acquired implementation capacities especially through implementation of

cooperative projects with other ministries, where the implementation responsibilities were shared with other ministries. Such co-implementation projects progressively grew in the budget size and coverage area. In FY 2016, 22 subprojects were co-implementation projects with other ministries such as the MLIT (10 subprojects), the METI (9 subprojects), the MAFF (4 subprojects), the Ministry of Health, Labor, and Welfare (1 subproject), the Ministry of Internal Affairs and Communications (1 subproject), and the National Police Agency (1 subproject).<sup>22</sup> In addition, the co-implementation projects were handled not only by the Global Environment Bureau but also by other major three bureaus of the MOE (MOE, 2016b).<sup>23</sup> MOE officials pointed out in interviews that experiences through the co-implementation projects helped enhancement of implementation capacity for the subprojects utilizing the Carbon Tax.<sup>24</sup>

Political top-down initiatives were not effective in the case of the Carbon Tax. The Liberal Democratic Party (LDP) was reported to be including the “establishment of an environmental tax” in its manifesto for the 2003 general election (Nihonkeizai Shimbun, 2003). However, it was removed from the manifesto through coordination with the LDP’s Economy and Trade Committee. On the other hand, the Democratic Party of Japan (DPJ), which took power from September 2009 to December 2012, had included introduction of an environmental tax in the party’s basic policies and manifestos since 2003. The MOE increased the tax rates (resulting in an estimated revenue of more than JPY 1 trillion) in its proposal submitted in November 2009, soon after the DPJ took power. However, the DPJ had campaigned strongly for a drastic reduction of the gasoline tax with public demonstrations and slogans such as “Team for Reducing the Gasoline Price,” and its position on fossil fuel consumption was contradictory from the beginning (Yamaguchi, 2012).

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<sup>22</sup> The numbers do not add up to the total (22 projects) as some projects were co-implemented with more than one ministry.

<sup>23</sup> Based on the co-implementation projects in FY 2017. The three bureaus are Minister’s Secretariat (Waste Management and Recycling Department), Environmental Policy Bureau, and Environmental Management Bureau.

<sup>24</sup> Interviews with MOE’s deputy director level staff members on 9 May 2016 in the MOE headquarters in Tokyo and on 23 Feb 2017 in Manila.

In the process of introduction of the Carbon Tax, the MOE had to patiently keep requesting the establishment of the new tax for more than 8 years, even following the breakthrough inclusion of the economic instruments in the Basic Environmental Law, due to the strong sectionalism in the relevant ministries and lack of political leadership. However, the MOE managed to create the taxation mechanism as low-rate with special purpose usage, reflecting the opinions of various stakeholders, and the utilization of the special purpose tax revenues were smooth thanks to initial struggle through co-implementation of energy special account with the METI and other ministries.

In summary, the following can be identified as contributing factors for successful introduction of the tax and smooth implementation of the special purpose revenues:

- (i) utilization of external staff and capacity functioned favorably; and
- (ii) potential absorptive capacity of the MOE was enhanced through co-implementation projects with various ministries.

## **2.5 Findings and Discussions**

This section examined three examples of the MOE's responses to external requirements and expectations. The main case was transport of radioactive soil and waste to the Fukushima ISF by the MOE and analyzed the factors that enabled a relatively small and inexperienced institution to smoothly handle the unprecedented challenge. The interviews and dialogues with various GOJ officials revealed that some questioned why the MOE should have been assigned the task of decontamination and transport of the radioactive soil and waste to the ISF and doubted its ability to be successful in the task as it was neither an organization with implementation capacity nor the organization responsible for the nuclear disaster. However, the MOE promptly and successfully prepared plans and started initial implementation of the transport to ISF despite unprecedented challenges and public pressure.

Other experiences of the MOE were also reviewed to analyze its responses to external requirements and expectations—namely the formulation of the Basic Environment Law and measures to address climate change, especially the Carbon Tax.

The Basic Environment Law was adopted in 1993 in response to emerging environmental issues, including the need for sustainable development addressed in the UNCED in 1992. The law served as the turning point in many aspects of Japan’s environmental policy approach and provided breakthroughs in areas such as climate change and EIA. The MOE took the lead on various initiatives regarding climate change, and the review in this section focused mainly on the creation of the Carbon Tax. Various environmental taxes had been studied since the early 1990s, and the first request to the MOF was submitted in 2003. The Carbon Tax was finally adopted in 2012 with a relatively low tax rate and with special purposes for the use of the revenue.

Several facts and observations about the reviewed cases were of interest from the organizational culture and absorptive capacity perspectives. **Table 2.5** summarizes the identified contributing factors for innovative and flexible responses to the external requirements and expectations in the cases of the Ministry of the Environment.

**Table 2.5: Identified Contributing Factors from the Cases of the Ministry of the Environment**

<b>Contributing Factors</b>	<b>Case 1: Transport to ISF</b>	<b>Case 2: Basic Environment Law</b>	<b>Case 3: Carbon Tax</b>
Open and flexible organizational culture (weakening of the grid dimension)	+	+	
Individualized culture (weakening of the group dimension)	+		
Utilization of potential absorptive capacity	+		+
Utilization of realized absorptive capacity	+		
Utilization of external capacity	+	+	+

ISF = interim storage facility

Source: Author.

Based on the reviewed cases and a series of interviews through the study, the MOE in general was observed to have an organizational culture with an atmosphere friendly to external staff and flat decision-making. In the case of the transport to ISF, some key positions were filled

with secondees from other relevant ministries and most of the responsible staff members were externally recruited temporary staff, resulting in a high level of staff inflow to a relatively small organization; the same was true in the case of the Basic Environment Law formulation, where the director was seconded from the MOF and the office members were appointed from various other departments (although from within the agency and not externally in this case). It was also noted that the secondment arrangement with the MOF worked favorably in the case of the Carbon Tax. As reviewed in the cases, the MOE's organizational culture with its friendly atmosphere and flat decision-making, or the weakened grid dimension, contributed to its ability to adopt to unprecedented challenges flexibly, and to promptly acquire an implementation capacity with a rapid influx of new and external staff.

From the perspective of absorptive capacity, seemingly unrelated experiences from the management of pollution-related diseases acted as a key absorptive capacity in the case of the transport to ISF, especially for the risk communication and management needed to properly address the high degree of public anxiety over the unknown risks of nuclear hazards. This was potential absorptive capacity that existed in the MOE, but was not explicitly considered in the decision about the implementation arrangements. Another absorptive capacity factor in the transport to ISF was the capacity acquired through the transport and treatment of PCBs. This was taken into consideration from the early stages of planning as realized absorptive capacity, and the JESCO, the MOE's special purpose company for PCB treatment, was officially assigned to undertake the ISF tasks in the implementation stage by a revised JESCO establishment law.

The MOE was required to act quickly and flexibly, especially toward the end of the planning process, to commence the transport to ISF as per the commitment made by the GOJ despite the belated progress of the ISF development and the difficulties in coordination with the municipal governments. Flexibility was also a key element in the preparation of the Basic Environment Law and the Carbon Tax, as the strong sectionalism within the GOJ required tough negotiations and coordination with the relevant ministries. The MOE effectively internalized expertise from other ministries through secondment arrangements and joint implementation with key ministries. It was also observed that issues were often brought to open discussions, such as

external committees (e.g., Working Group on Transport of Soil and Waste to ISF, a small committee for the Basic Environment Law), to avoid delays and overcome sectionalism, partly because the public often supports environmental improvement. Top-down decision-making from the political powers was also a favorable factor in terms of quick responses by the organization.

It is recommended that a review of an organization's various experiences, culture, and absorptive capacity be required for innovative and flexible responses by organizations through setting up implementation arrangements for responses to an unprecedented challenge that requires quick decisions and flexible actions. This review should include all experiences and characteristics, even those not seemingly directly related to the current situation.

## **Note**

Main contents of this chapter were published as below:

Nishimura, M. (2016). Transport of Radioactive Soil and Waste to the Fukushima Interim Storage Facility—From Organizational Arrangement Perspectives. *Business and Management Studies*, 2(4), 15-20. <http://dx.doi.org/10.11114/bms.v2i4.1938>



## **Chapter 3**

# **Application of Road Safety Audits and Other Experiences by the Ministry of Land, Infrastructure, Transport and Tourism**

Road safety audits (RSAs) have been applied in many developing and developed countries as a way to enhance the safety of road infrastructure since they were first introduced in the late 1980s in the United Kingdom. RSAs have proven to be an effective tool to enhance the design of both new and existing roads from an overall safety perspective. In the early 2000s, the Government of Japan (GOJ) reviewed RSAs as well as new public management (NPM) (both viewed as good practices in the United Kingdom and other countries) and now promotes RSAs in developing countries through its bilateral and multilateral official development assistance (ODA). However, although NPM was applied as performance management of road administrations (PMRA) widely within Japan, RSAs have not been applied on Japan's domestic road projects. This article reviews factors that may explain why the GOJ has not applied RSAs from the organizational culture perspective of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), which administers the Japanese road transport subsector. The article also reviews an RSA pilot project started in 2013 and a nation-wide pilot program started in 2015. Factors that may influence how the GOJ can apply RSAs successfully are reviewed in line with the MLIT's absorptive capacity.

### 3.1 Introduction

The RSA process was developed to proactively improve the safety of road networks by identifying and reporting on the safety status of the network. An RSA is a useful device for identifying potential safety improvements at any time in the project's lifespan including the planning, design, construction, or as-built stage (Owers & Wilson, 2001). RSAs were first introduced in the United Kingdom in the late 1980s, and a guideline was published in the United Kingdom in 1990. Many countries have applied RSAs since then, and the World Road Association (referred to as PIARC based on its original French name) published guidelines on RSAs for new road projects in 2011 (World Road Association, 2011) and on safety inspection for existing roads in 2012 (World Road Association, 2012). With the exception of Japan, major countries have applied the practice, although the GOJ promotes RSAs through its bilateral and multilateral ODA to developing countries. This article attempts to conduct organizational analysis of the responsible national-level agency in road infrastructure—the MLIT—to identify factors why RSAs have not been applied and how they could be implemented effectively in Japan, especially from the organizational culture and absorptive capacity perspectives. The research is based on interviews conducted by the author with relevant government officials and stakeholders, in addition to a literature review and the author's first-hand experience.

Organizational culture is an important factor in organizational analysis (Smircich, 1983). Culture can be studied as an integral part of the adaptation process of organizations, and specific culture traits may be useful predictors of performance and effectiveness (Denison & Mishra, 1995). Organizational culture fosters innovation and imitation, and many factors have been shown to be determinants for supporting an innovative organizational orientation (Naranjo-Valencia, Jiménez-Jiménez, & Sanz-Valle, 2011). Each organization has a different culture, and Chatman and Jehn (1994) found that stable organizational culture dimensions existed across industries and that these culture dimensions varied more across industries than within them. The public sector and transport industry, characterized by long-linked technologies and low growth, were typically found to be detail and stability oriented rather than people and innovation oriented.

Cohen and Levinthal (1990) introduced the concept of absorptive capacity as the ability of an organization to recognize the value of new, external information, assimilate it, and apply it to its activities. It is critical to the organization's innovative capabilities and is largely a function of the organization's level of prior related knowledge. Zahra and George (2002) distinguished between the capabilities to acquire and assimilate knowledge (potential absorptive capacity) and the capabilities to transform and exploit this knowledge (realized absorptive capacity). Potential and realized absorptive capacities can differentially influence the creation and sustenance of the organization's competitive advantage. Absorptive capacity is also dependent on the way organizations manage information inflow. Ishizuka (2005) pointed out that direct exposure of various individuals is a more effective means of absorbing external information as compared to the gatekeeping of information by a small number of individuals, particularly in a rapidly changing environment.

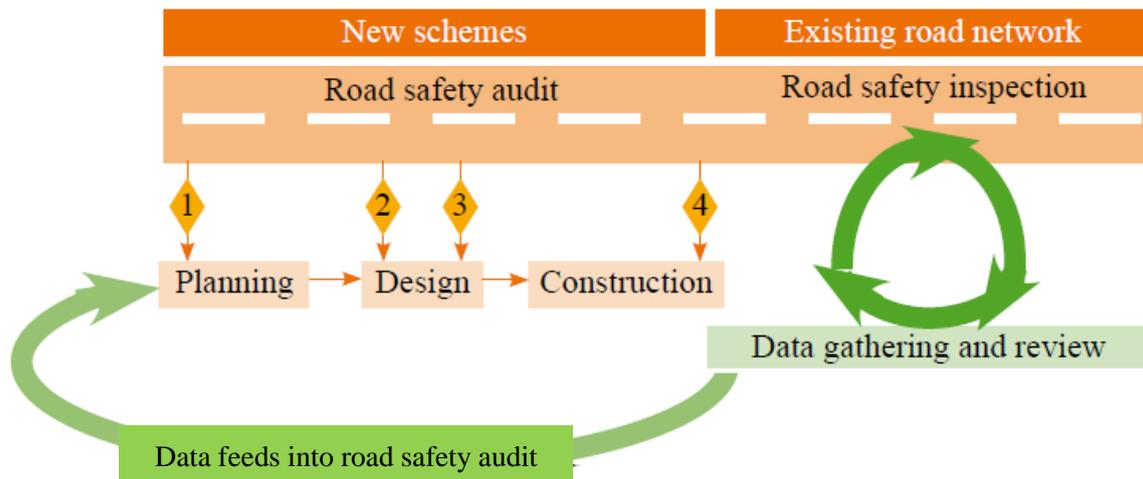
The concepts of absorptive capacity and organizational culture are closely interlinked. Organizational culture in management formalization is one of the key determinants of absorptive capacity (Lane & Lubatkin, 1998). Higher levels of innovativeness in the organizational culture are associated with a greater capacity for adaptation and innovation. In addition, higher levels of innovativeness are associated with cultures that emphasize learning, development, and participative decision making. (Hurley & Hult, 1998). Organizational culture acts as a determinant of absorptive capacity to influence the implementation of new technologies (Harrington & Guimaraes, 2005).

## **3.2 Road Safety Audits**

### **3.2.1 Definition and Benefits**

PIARC defined an RSA in its guidelines as: "a formal road safety examination of the road or traffic project, or any other type of project which affects road users, carried out by an independent, qualified auditor or team of auditors who reports on the project crash potential and safety performance for all kinds of road users" (World Road Association, 2011). The essential elements of this definition are that it is: (i) a formal process, (ii) an independent

process, (iii) carried out by someone with appropriate experience and training, and (iv) restricted to road safety issues. PIARC took the initiative to define pro-active procedures at the project design stage as RSAs and the on-site review of existing roads by driving and walking as road safety inspections (RSIs) as shown in **Figure 3.1**. However, the term RSA is often in practice used more broadly to refer to both RSAs and RSIs without the above distinction. This article will review both RSAs and RSIs in Japan.



Source: World Road Association (2011).

**Figure 3.1: Concept of Road Safety Audit and Road Safety Inspection**

Various studies have reviewed the effectiveness of RSAs and concluded that they show strong benefits in proactively reducing accidents, thereby saving lives and decreasing damage. Wells (2000) assessed the benefits of the RSA program in the United Kingdom and found that making changes in the design phase resulted in considerable monetary benefits (€17,000 in average of 22 projects). The Dutch National Road Safety Research Institute (2007) showed clear monetary benefits of RSAs. Due to the independent nature of the safety auditors, the RSA recommendations were noted as being helpful when the road developers or managers worked with stakeholders such as political leaders, road users, or road side residents. The RSA process looks at roads from a purely technical safety viewpoint without outside influences.

### 3.2.2 Application in Various Countries

After their introduction in the United Kingdom in the late 1980s, RSAs were further developed in the United Kingdom, other European countries, Australia, and New Zealand. Following successful implementation in these countries, other countries have also applied RSAs, and international organizations like PIARC have promoted their use through guidelines and conferences (World Road Association, 2011). Multilateral and bilateral development agencies have noted the benefits of RSAs and promoted their use in developing countries. The World Bank has advocated RSAs for new construction and traffic management schemes (Gwilliam & Shalizi, 1996), and the Asian Development Bank (ADB) prepared an operational tool kit for RSAs to be used in its developing member countries (ADB, 2003).

Many developed and developing countries have applied RSAs. According to the latest report by the World Health Organization (WHO), 147 out of 180 countries/areas worldwide require RSAs on new roads, and 138 countries/areas require RSIs on existing road infrastructure (WHO, 2015). Among Group of Twenty (G20) member countries, Japan, Mexico, and the United States are the only countries that have not applied RSAs, and India and the United States are the only countries that have not applied RSIs (**Table 3.1**). Only Japan and the United States have not applied RSAs among the ODA donor countries, or the 29 Development Assistance Committee member countries of the Organisation for Economic Co-operation and Development.

The U.S. federal government recently started promoting the use of RSAs. In 2014, the Federal Highway Administration (FHWA) of the Department of Transport announced in its website that the FHWA would “work with State and local jurisdictions and Tribal Governments to integrate RSAs into the project development process for new roads and intersections, and also encourages RSAs on existing roads and intersections” (FHWA, 2014). This leaves Japan as the only country among the major and development donor countries that has not applied RSAs in its domestic practice.

**Table 3.1: Application of the Road Safety Audit Process by Major Countries**

Country	G20 member	OECD-DAC member	RSA for new roads	RSI for existing roads
Argentina	X		Yes	Yes
Australia	X	X	Yes	Yes
Austria		X	Yes	Yes
Belgium		X	Yes	Yes
Brazil	X		Yes	Yes
Canada	X	X	Yes	Yes
China	X		Yes	Yes
Czech Republic		X	Yes	Yes
Denmark		X	Yes	Yes
European Union	X	X	Yes	Yes
Finland		X	Yes	Yes
France	X	X	Yes	Yes
Germany	X	X	Yes	Yes
Greece		X	Yes	Yes
Iceland		X	Yes	Yes
India	X		Yes	No
Indonesia	X		Yes	Yes
Ireland		X	Yes	Yes
Italy	X	X	Yes	Yes
<b>Japan</b>	<b>X</b>	<b>X</b>	<b>No</b>	<b>Yes</b>
Korea		X	Yes	Yes
Luxembourg		X	Yes	Yes
Mexico	X		No	Yes

New Zealand		X	Yes	Yes
Norway		X	Yes	Yes
Poland		X	Yes	Yes
Portugal		X	Yes	Yes
Russia	X		Yes	Yes
Saudi Arabia	X		Yes	Yes
Slovak Republic		X	Yes	Yes
Slovenia		X	Yes	Yes
South Africa	X		Yes	Yes
South Korea	X		Yes	Yes
Spain		X	Yes	Yes
Sweden		X	Yes	Yes
Switzerland		X	Yes	Yes
The Netherlands		X	Yes	Yes
Turkey	X		Yes	Yes
United Kingdom	X	X	Yes	Yes
United States	X	X	No	No

DAC = Development Assistance Committee, G20 = Group of Twenty, OECD = Organisation for Economic Co-operation and Development, RSA = road safety audit, RSI = road safety inspection.

Note: Countries which belong to G20 and/or OECD-DAC are included in the table.

Source: World Health Organization (2015).

### 3.3 Japan's Response to Road Safety Audit

#### 3.3.1 Official Development Assistance

The GOJ has promoted RSAs in its bilateral and multilateral ODA projects and knowledge activities. Japan's bilateral ODA is provided mainly through the Japan International

Cooperation Agency (JICA). JICA provided third-country training courses on “road safety engineering and management” in 2010–2015. The training, provided to senior government officials and engineers from nine countries (Cambodia, Laos, Myanmar, Viet Nam, Indonesia, Malaysia, Philippines, Thailand, and Timor-Leste), included the RSA process as one of the main components. JICA also provided similar third-country training on “road safety engineering and management for Africa” in 2015 to Botswana, the Democratic Republic of Congo, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, and Zambia (JICA, 2016).

The GOJ is the largest shareholder of the ADB, and the ADB president has been Japanese, as has been the largest number of international staff. The ADB introduced the RSA tool kit in 2003 (ADB, 2003) and committed to mainstream RSAs in its road projects through the Sustainable Transport Initiative (ADB, 2010). The ADB further prepared a road safety action plan in 2012 and requested that RSAs be included in every phase of the project cycle including planning, design, construction, pre-opening, and operation and maintenance (ADB, 2012). The World Bank also promoted the use of RSAs in its projects and non-lending activities in various countries including Nigeria, Tanzania, China, Argentina, Republic of Yemen, and India (World Bank, 2014).

### **3.3.2 Application to Domestic Road Projects**

The GOJ’s various promotion efforts of RSAs through bilateral and multilateral ODA did not stem from and were not reflected in its domestic road projects. There has not been an RSA framework for Japan’s domestic road projects. Researchers in Japan have studied RSAs and provided policy recommendations since the 1990s. The Japan Society of Civil Engineers formed an RSA Working Group under its Standing Committee of Infrastructure Planning Study in 1997 (Nishimura, 2002). Imada et al. (1999) reviewed various aspects of the RSA process in other countries, studied Japan’s practices in road safety, and recommended a step-by-step approach toward the application of RSAs in Japan as: (i) a pilot project of RSIs on existing roads, (ii) the full application of a RSI program, (iii) a pilot project of RSAs on new roads, and (iv) the full application of an RSA program. In March 1999, the study also conducted a survey

of MLIT highway offices, municipal governments, traffic police departments, and consulting firms. The results showed only 6% (16 organizations out of the 287 that responded) were aware of the RSA approach and almost all the respondents neither knew what it was nor understood its benefits. It concluded that the dissemination of RSA methods and benefits was essential for the application of RSA practices in Japan.

Some researchers reviewed transport planning practices in the United Kingdom and recommended the use of RSAs and NPM. Takahashi et al. (2003) recommended that Japan establish a new road management framework under which the mandates of respective organizations would be clearly defined and practices like RSAs could effectively function. They noted that Japan's organizations did not have clearly defined mandates and lacked flexibility, and they called for reforms to the awareness of road management organizations. Takano, Takahashi, and Kato (2003) recommended that Japan learn from the United Kingdom and adopt RSA and NPM systems. Imada and Nam Gung (2000) proposed the use of computer systems to support RSAs through the review of the UK practice. The MLIT adopted the NPM system eventually as PMRA but not an RSA system (to be discussed further in the next section).

The MLIT's research agency, the National Institute for Land and Infrastructure Management (NILIM), studies new policy ideas before their actual application and often acts as the gatekeeper of incoming information for new technology. In the fiscal years 2001–2004, the road traffic department of the NILIM conducted a series of studies on methods leading toward the application of a RSA system in Japan. The studies reviewed situations in other countries and concluded that RSAs were effective for safety enhancement, cost reduction, and raising awareness. The NILIM recommended that the Road Bureau of the MLIT adopt a RSA system (Mori & Ikeda, 2003 and 2005).

### **3.4 Factors of Non-application of Road Safety Audits in Japan**

The GOJ has not applied RSAs in its domestic road projects, although this was recommended by the NILIM and various researchers. Although the WHO (2015) considered that RSIs on existing roads were conducted in Japan, RSIs in Japan are not regular or formal audits and are

limited to occasional inspections. In this section, the factors for non-application of RSAs in Japan's domestic road projects will be reviewed.

### **3.4.1 Organizational Culture of the Ministry of Land, Infrastructure, Transport and Tourism and Application of Performance Management of Road Administrations**

The Road Bureau of the MLIT is responsible for the overall development and management of roads within the GOJ and formulates policies in the road transport subsector. Based on interviews with MLIT officials<sup>25</sup>, the organizational culture of the Road Bureau can be characterized by top-down decision-making, closedness (i.e., lack of openness), mutuality, and sectionalism. Some pointed out that such organizational culture traits of the Road Bureau had been weakened after a series of external criticisms on its closedness and mutuality through the processes of privatization of the former Japan Highway Public Corporation and three other expressway corporations completed in 2002<sup>26</sup> and reform of the road earmarked budget system completed in 2009.<sup>27</sup> Yamada (1991) introduced that even strong organizational cultures can be weakened or changed when the environment surrounding the organization radically changes through an example of landline telephone services of AT&T in the United States. Such forced changes to the Road Bureau culture must have occurred as there was strong public criticism against the MLIT, the Road Bureau, expressway corporations, and their subsidiary corporations throughout the privatization process.

It was also noted that the centralized, top-down characteristics often extend beyond the MLIT's headquarters and into the national highway offices, expressway and toll road corporations, and municipal governments across the country in the field of road management. The hierarchy is said to converge to the Planning Division of the Road Bureau especially for technical issues (**Figure 3.2**). Such an organizational culture is a typical "Kasumigaseki Culture," the GOJ's

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<sup>25</sup> Based on interviews with MLIT officials from the Minister's Secretariat, Road Bureau, Water and Disaster Management Bureau, and Ports and Harbors Bureau conducted on 24 January 2014, 20 February 2014, and 24 April 2014 in MLIT headquarters in Tokyo.

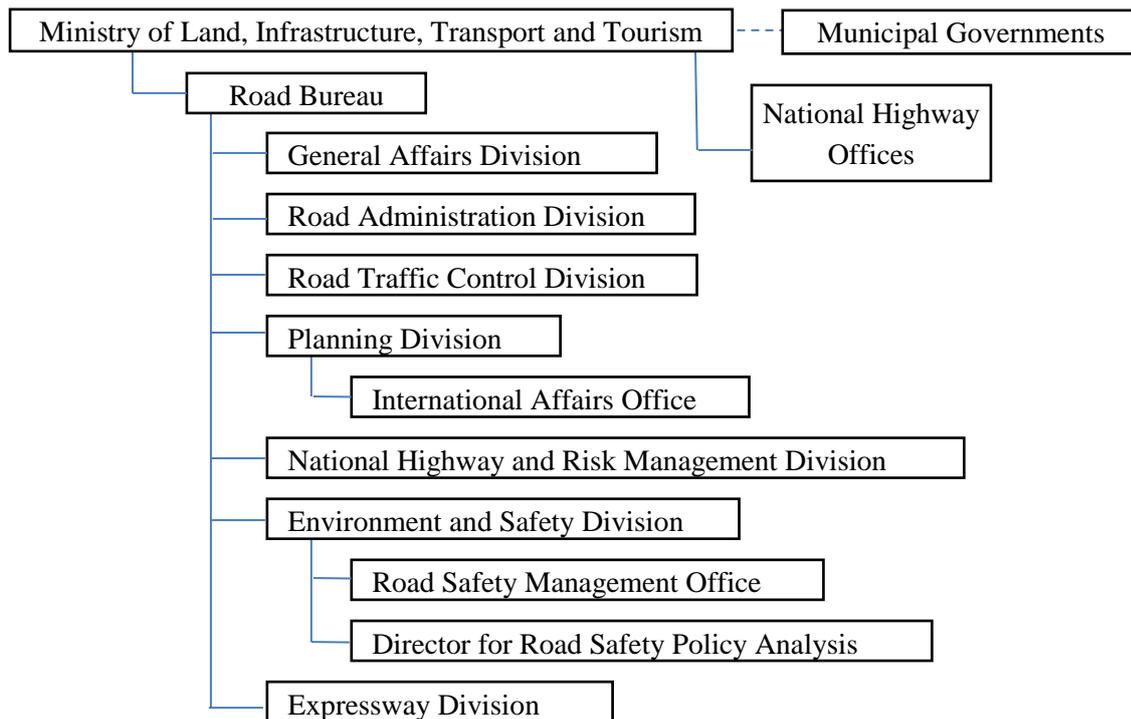
<sup>26</sup> The process and other details of the privatization can be found in Yamagoshi (2006).

<sup>27</sup> Earmarked road budget was abolished from fiscal year 2009 based on a joint GOJ and ruling party agreement on 8 December 2008. Refer to MLIT (2017).

unique culture named after the location of the GOJ headquarter buildings and described by Nishio (2003). Kasumigaseki culture is characterized by closedness, privilege driven, sectionalism, centralization-fusion, and mutual dependency and is far from being a culture of individualism, where innovative ideas spring from individual choice and responsibility. It was noted in the interviews with MLIT officials<sup>28</sup> that such Kasumigaseki culture traits were even stronger in the Road Bureau than in other comparable bureaus in charge of large infrastructure development such as the Water and Disaster Management Bureau and the Ports and Harbors Bureau within the MLIT. Some noted that Road Bureau is often said to have a military culture, where top officers' orders have absolute powers. The MLIT, especially Road Bureau, was found to have strong traits of the group dimension and can be characterized as hierarchy and egalitarianism in **Figure 1.1**.

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<sup>28</sup> Based on interviews with MLIT officials from the Minister's Secretariat, Road Bureau, Water and Disaster Management Bureau, and Ports and Harbors Bureau conducted on 24 January 2014, 20 February 2014, and 24 April 2014 in MLIT headquarters in Tokyo.



Notes: As of Dec 2016, offices below division-level, unrelated to road safety and international affairs, were omitted.

Source: Author, based on the MLIT website.

**Figure 3.2: Organizational Chart of the Road Bureau, the Ministry of Land, Infrastructure, Transport and Tourism**

It was also observed from the interviews that the Road Bureau had a strong gatekeeping culture in terms of information gathering and importation of new policy ideas.<sup>29</sup> MLIT officials noted that information on international practices and ODA activities was handled in the International Affairs Office, and road safety issues were handled by the Road Safety Management Office and the Director for Road Safety Policy Analysis (**Figure 3.2**). Interview results showed that the Road Bureau was more oriented to domestic issues than to international affairs in terms of information gathering and dissemination compared to other ministries and bureaus within the MLIT, including the Water and Disaster Management Bureau, which hosted the World Water

<sup>29</sup> Ibid.

Forum in 2003 in Kyoto and continues its active involvement in international events like World Water Day (MLIT, 2014a).

Such organizational culture in information and knowledge sharing also descends to 96 national highway offices under MLIT’s 9 regional bureaus (including Hokkaido Regional Development Bureau), which cover all over the country and act as the frontline of the project implementation (**Table 3.2**). Takahashi, Okutani, and Aoyama (2003) examined knowledge sharing and management practice in MLIT’s local offices and pointed out the following characteristics and issues: (i) there is no sufficient incentive to introduce knowledge sharing mechanism through bottom-up approach from local offices, (ii) data and information are kept individually by staff members and not effectively shared within the organization, (iii) there is no incentive for changes and new ideas unless problems arise, and (iv) business style tend to be inflexible due to insufficient incentive for changes. These points also support the interview results that showed strong top-down decision making with gatekeeping information flow and not much incentive for bottom-up individual ideas.

**Table 3.2: National Highway Offices of the Ministry of Land, Infrastructure, Transport and Tourism**

<b>Regional Bureaus</b>	<b>National Highway Offices <sup>(1)</sup></b>	<b>Total</b>
Hokkaido <sup>(2)</sup>	Sapporo, Hakodate, Otaru, Asahikawa, Muroran, Kushiro, Obihiro, Abashiri, Rumoi, Wakkanai	10
Tohoku	Aomori, Iwate, Sanriku, Minami-sanriku, Sendai, Akita, Yuzawa, Noshiro, Yamagata, Sakata, Fukushima, Koriyama, Iwaki	13
Kanto	Hitachi, Joso, Utsunomiya, Takasaki, Omiya, Kita-shuto, Chiba, Shuto, Tokyo, Sobu, Tokyo Outer Ring Road, Yokohama, Kawasaki, Kofu, Nagano	15
Hokuriku	Takada, Uetsu, Niigata, Nagaoka, Toyama, Kanazawa	6
Chubu	Tajimi, Takayama, Numazu, Shizuoka, Hamamatsu, Nagoya, Aichi, Meishi, Mie, Hokusei, Kisei, Iida	12

Kin-ki	Fukui, Shiga, Kyoto, Fukuchiyama, Osaka, Naniwa, Hyogo, Hanshin, Toyooka, Himeji, Nara, Wakayama, Kinan	13
Chugoku	Tottori, Kurayoshi, Matsue, Hamada, Okayama, Hiroshima, Fukuyama, Miyoshi, Yamaguchi	9
Shikoku	Kagawa, Tokushima, Matsuyama, Ozu, Kochi, Nakamura, Tosa	7
Kyushu <sup>(3)</sup>	Fukuoka, Kita-kyushu, Saga, Nagasaki, Kumamoto, Yatsushiro, Oita, Saeki, Miyazaki, Osumi, Kagoshima	11
<b>Total</b>		<b>96</b>

Notes: (1) As of April 2017, the offices without mandates for road management and development are omitted. Some of the offices also have mandates besides roads. The MLIT also has other local offices in charge of management and development of rivers, dams, sabo, ports, airports, etc.

(2) The bureau is named Hokkaido Regional Development Bureau and has slightly different organizational structure from the other regional bureaus. The local branches are called Development and Construction Departments.

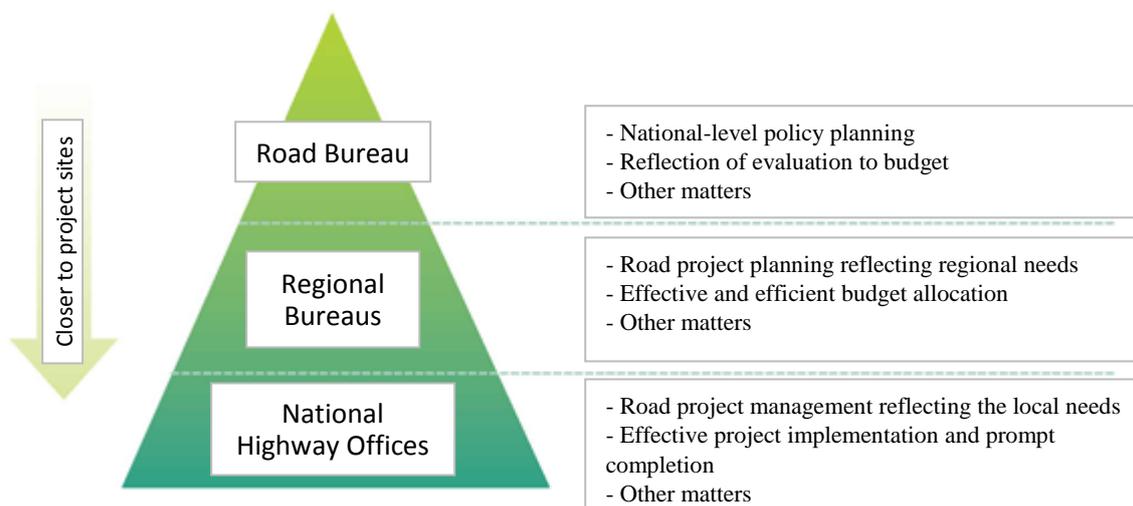
(3) The offices in Okinawa are under the jurisdiction of Cabinet Office and not included in this table.

Source: Author, based on the MLIT website (<http://www.mlit.go.jp>).

As mentioned in the previous section, RSA and NPM systems were often recommended together by academia and MLIT's research institute, NILIM, in the late 1990s and early 2000s as related good international practices. Through the gatekeeping manner of information gathering of the MLIT, NPM was well recognized by the Road Bureau, especially in the Planning Division, and was assimilated and exploited to from the MLIT's realized absorptive capacity as PMRA (MLIT, 2016a). MLIT officials noted in interviews<sup>30</sup> that a "champion" existed in the Planning Bureau, who studied abroad and promoted the PMRA and became considerably influential to get his ideas across the management and a wide range of staff. However, there was no such champion or momentum for RSA, and some officials noted that there might be some hesitancy within the Road Bureau as road safety matters always faces sectionalism "turf issue" with the National Police Agency. The PMRA involved all levels of

<sup>30</sup> Based on interviews with MLIT officials from the Road Bureau conducted on 20 February 2014 and 24 April 2014 in MLIT headquarters in Tokyo.

road organizations in a centralized top-down manner (**Figure 3.3**), which illustrates well-adopted practices through the unique organizational culture of the MLIT, as the original NPM in the United Kingdom did not include such characteristics and was developed with decentralization of authority. Due to the limited capacity and interest in international affairs and closed gatekeeping, the full adoption of a PMRA system by the MLIT also left an RSA system unapplied, and the researches on RSAs remained as a potential absorptive capacity of the MLIT. Also, the MLIT's organizational culture, where incentives for bottom-up policy changes are insufficient as Takahashi, Okutani, and Aoyama (2003) pointed out, made it difficult to create a ground for non-gatekeeping, bottom-up adoption of RSA system in Japan.



Source: MLIT (2016a).

**Figure 3.3: Performance Management of Road Administrations in Japan**

Another factor that may explain why the Road Bureau did not adopt an RSA approach could be its strong culture of closedness and mutuality. RSAs delegate strong independent authority to external auditors. Such an approach would change the balance of the well-established hierarchical management system under which all relevant organizations were mutually and closely reliant. The officials involved in the pilot project in Chiba noted that there were concerns over the word “audit” because of the strong implication of external authority, and the

term used was eventually changed to “diagnosis” instead of “audit” in the nation-wide pilot program (to be discussed in the following sections).<sup>31</sup> They also observed that avoidance of creating a new strong external authority must have been one of the factors explaining why the MLIT did not implement an RSA program.

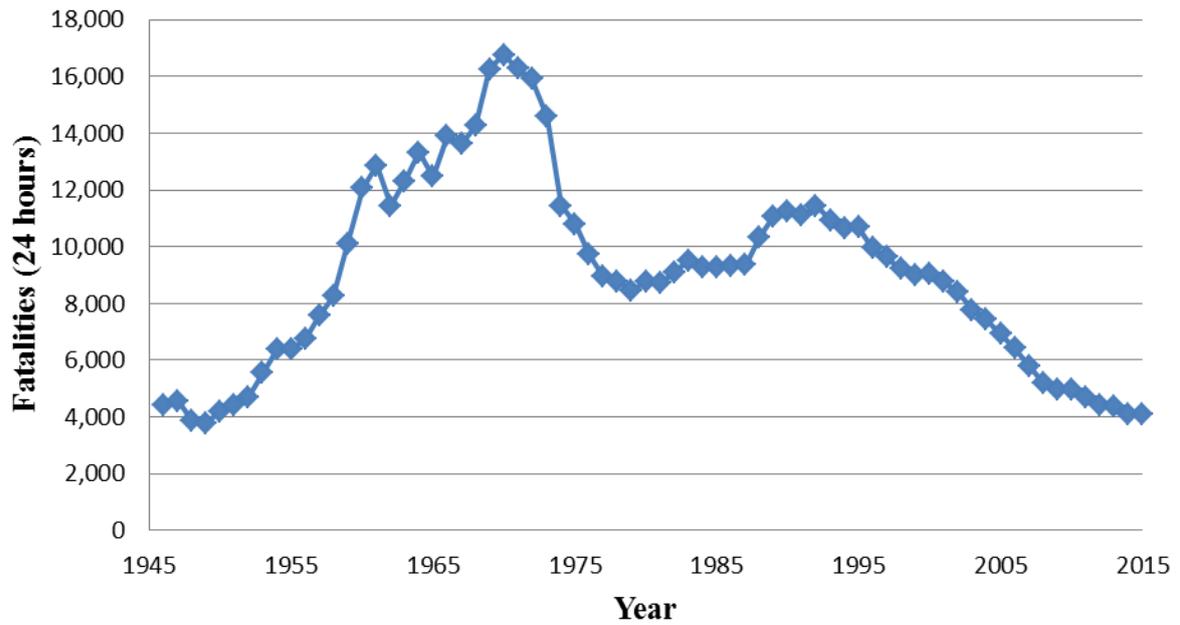
### 3.4.2 Capacity in Road safety

An RSA approach has proven to be effective and beneficial in reducing traffic accidents in many countries around the world; but how has Japan’s road safety capacity and performance been without an RSA system? Loo et al. (2005) conducted an analysis on road safety strategies in six administrations comprising Australia, California, United Kingdom, Japan, New Zealand, and Sweden. It examined nine components: (i) vision, (ii) objectives, (iii) targets, (iv) action plan, (v) evaluation and monitoring, (vi) research and development, (vii) quantitative modelling, (viii) institutional framework, and (ix) funding. It concluded that Japan performed worst in “evaluation and monitoring” mainly due to the absence of RSAs, but was good at formulating and implementing action plans.

Japan enacted the Traffic Safety Policies Law in 1971 and implemented a series of five-year road safety plans. Thanks to these efforts, the traffic fatality has been declining since the 1990s (**Figure 3.4**). Japan has developed a unique and effective approach and implementation schemes in road safety enhancement, as is often observed in other fields (Suzuki, 2008; Shin, 2014). However, as Loo et al. (2005) pointed out, the capacity could be further enhanced by applying an RSA approach and learning further from international good practices.

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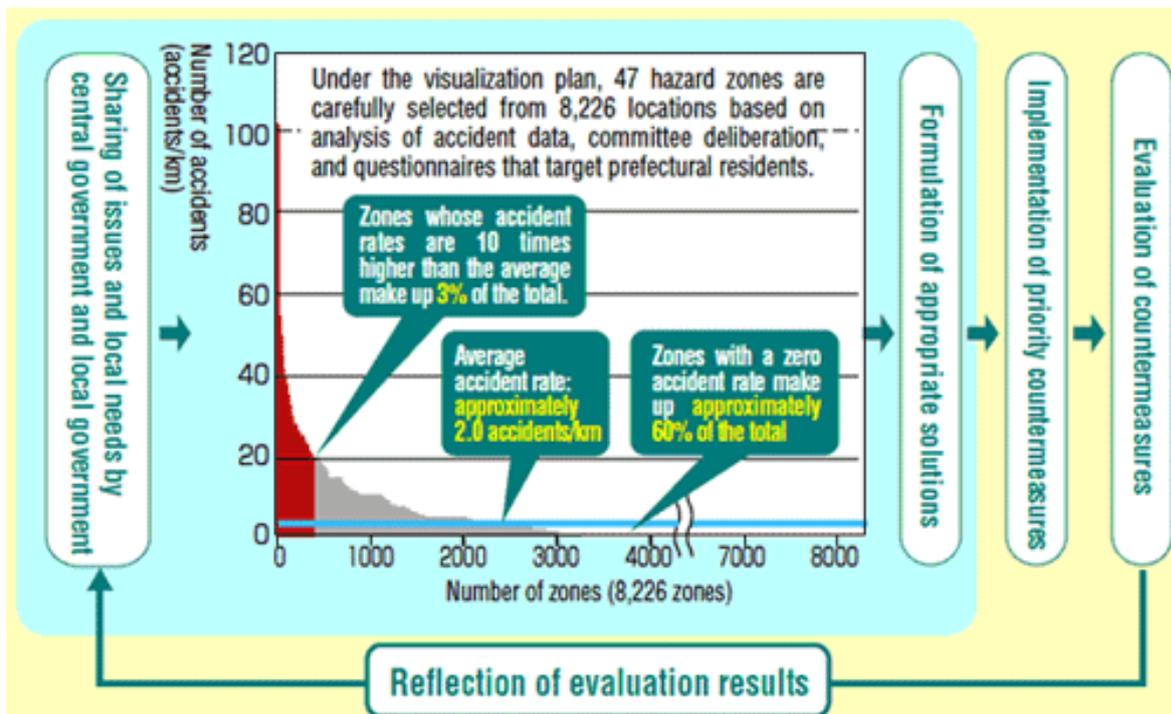
<sup>31</sup> Based on interviews with managers and officials of Road Safety Division of Chiba National Highway Office on 3 September 2013 and 2 April 2014 in Chiba, Japan.



Source: National Police Agency.

**Figure 3.4: Road Traffic Accident Fatalities in Japan**

The MLIT also enhanced road safety capacity through a unique method with application of the PMRA. The method was used to identify the road sections which require priority countermeasures by analyzing the number of accidents per kilometer in each road segment. The information was actively disclosed graphically (**Figure 3.5**) to enhance public awareness and understanding. This approach contributed to drastic reductions of the number of accidents in many priority sections, resulting in reduction of accidents in 45 prefectures in 2006 compared to the previous year (MLIT, 2007a).



Source: MLIT website.

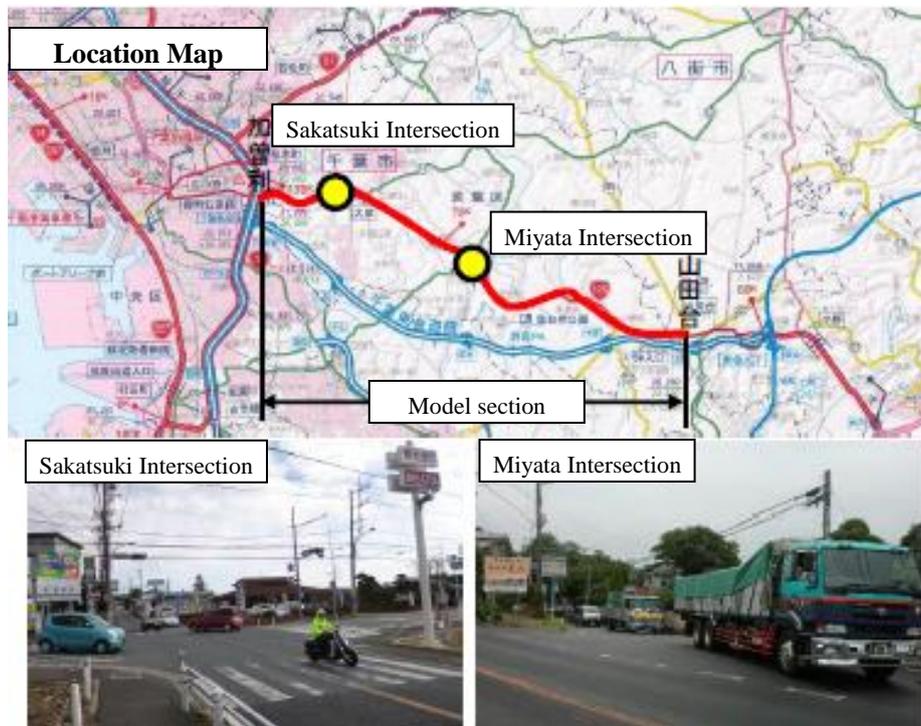
**Figure 3.5: An Example of Road Safety Measures through New Public Management**

### 3.5 Towards a Successful Application of a Road Safety Audit System in Japan

#### 3.5.1 Pilot Project in Chiba, Japan

Chiba Prefecture is in the Tokyo metropolitan area. Throughout the period 2000–2015, the traffic accident fatality rate in Chiba has been one of the four highest among 47 prefectures in Japan. The Chiba National Highway Office of the MLIT manages and develops major sections of the national highways in Chiba. In an attempt to enhancing traffic safety along the national highways, it started an RSA pilot project in 2013. No officials in the office except for the general manager knew about RSAs when the pilot project was proposed. The general manager had work experience with the ADB and initiated the pilot project based on his knowledge and experience. It was initiated as an RSI of existing roads on a section of about 20 km on the National Highway 126 (**Figure 3.6**). Four external auditors were selected comprising a traffic operations practitioner (TOP) and a traffic operations engineer (TOE), both certified by the Japan Society of Traffic Engineers (JSTE), and two university professors. The auditors

identified road safety risks especially at the two intersections (Sakatsuki and Miyata intersections) along the studied section of highway and made long- and short-term action recommendations (MLIT, 2014b and MLIT, 2015a).

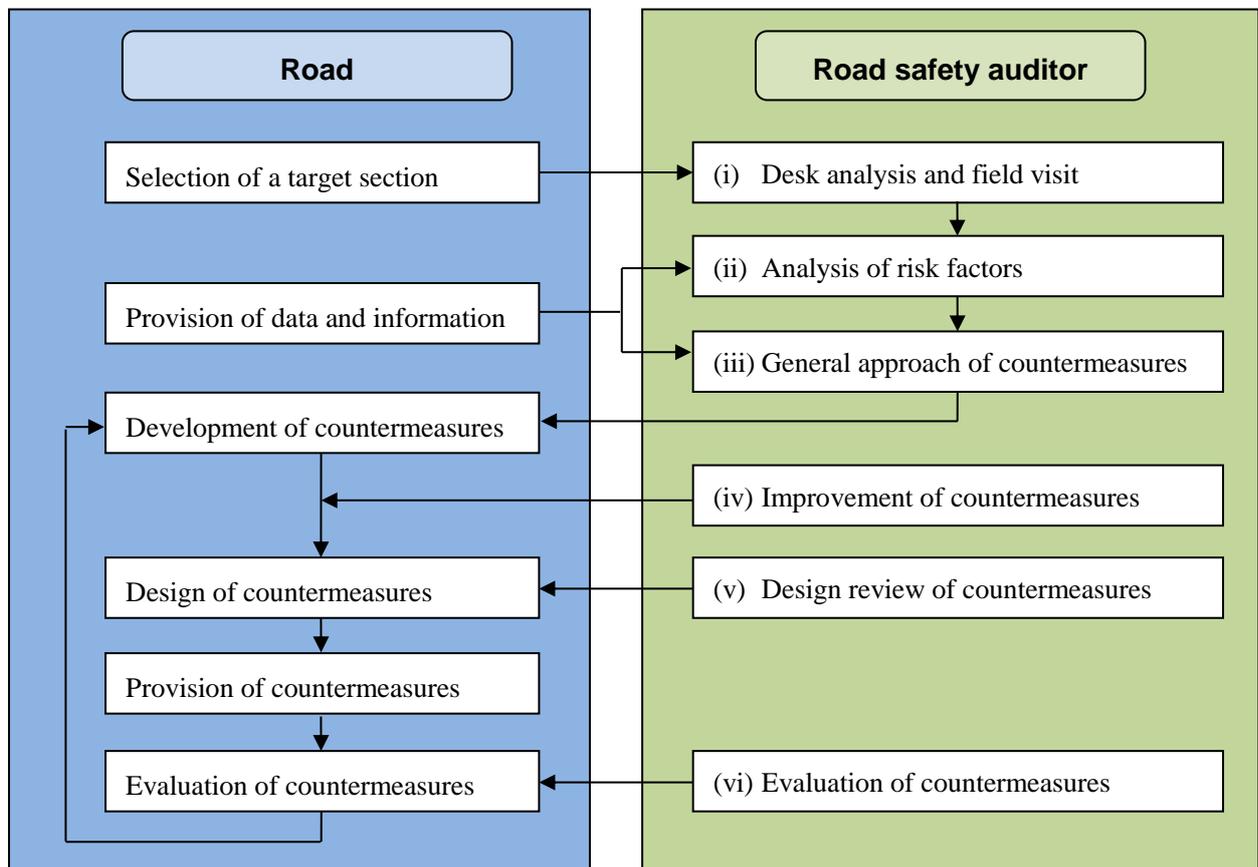


Source: MLIT (2014b).

**Figure 3.6: Model Section of the Chiba Pilot Project**

The RSA of the pilot project was conducted through six steps: (i) desk analysis and field visit, (ii) analysis of risk factors, (iii) general approach of countermeasures, (iv) improvement of countermeasures, (v) design review, and (vi) evaluation of effects (**Figure 3.7**). The proposed countermeasures included intersection and road design change, road signage improvement, signal phase change, and removal of safety hazards such as disturbing billboards. Evaluation would be conducted after the countermeasures were in place to measure the effectiveness of the countermeasures mainly through vehicle behaviors (**Table 3.3**). Factors like surface conditions (dry/wet) and light conditions (day/night) should also be considered for the evaluation of changes before and after the countermeasures (Russo, Biancardo, & Dell'Acqua, 2014). The general manager and the relevant Chiba Office staff noted that the team could easily conceptualize the benefits of an RSA and implemented the pilot project although no staff

member was aware of the RSA approach at the beginning.<sup>32</sup> The officials noted that the experiences of implementing road safety five-year plans and applying NPM had built up the capacity for the RSA pilot project as potential absorptive capacity of the MLIT organization.



Source: The author, based on MLIT (2014b).

**Figure 3.7: Auditing Process of the Chiba Pilot Project**

<sup>32</sup> Based on interviews with managers and officials of Road Safety Division of Chiba National Highway Office on 3 September 2013 and 2 April 2014 in Chiba, Japan.

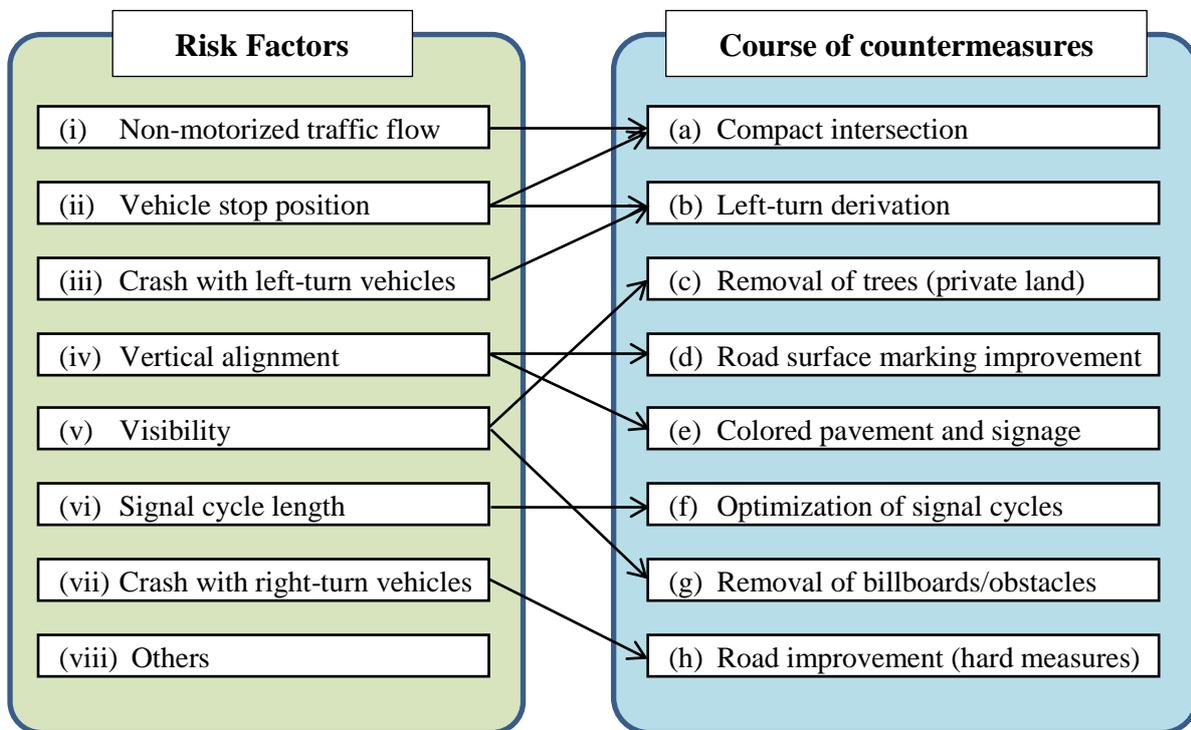
**Table 3.3: Evaluation Items for Countermeasures of the Chiba Pilot Project**

Category	Tools	Items to be measured of the changes
Vehicle behavior	Video surveillance of vehicles	(i) lane changing position, (ii) stopping position, (iii) paths of bicycles, (iv) distance between cars, etc.
	Probe data	(i)travel speed, (ii) sudden braking
	Speed gun survey	Travel speed
	Intersections passing time survey	Intersection passing time
	Braking frequency survey	Braking frequency
Driver behavior	Eye-camera survey	Attention points of drivers
User and public perceptions	Web-based questionnaire	Users' perceptions on safety, comfort, visibility, etc.
	Site questionnaire and interviews	Perceptions of roadside residents and business owners
	Public comment	Perceptions of public
Traffic accidents	Data from the Institute for Traffic Accident Research and Data Analysis	(i) the total number of traffic accidents, (ii) traffic accidents by category, (iii) ratio of fatal accidents, etc.

Source: Author, based on information from Chiba Highway Office.

The results of the pilot project were presented to the Chiba Prefecture Safety Enhancement Committee comprising various stakeholders including academia, NGOs, road users, traffic police, and road management organizations (MLIT, 2014b; MLIT, 2015a). The audit recommendations were prepared (**Figure 3.8**), but the countermeasures from the road manager had not been installed yet at the time of the committee. The committee members welcomed the pilot project results and noted the effectiveness of improving the safety of road infrastructure purely from a technical perspective and reducing any negative impacts of political interventions or sectionalism. They also noted that RSA approach would enhance adequate prioritization of safety enhancement measures and optimize allocation of limited resources available for safety enhancement. The committee recommended that the MLIT apply the safety audit to new roads

using the word “diagnosis” instead of “audit” until an RSA approach was officially adopted in Japan.



Source: Author, based on the information from the Chiba National Highway Office.

**Figure 3.8: Recommended Countermeasures by the Safety Auditors (Sakatsuki Intersection Case)**

### 3.5.2 Nation-wide Pilot Program

The pilot project by the Chiba National Highway Office was reported to the Road Safety Management Office, Road Bureau at the headquarters of the MLIT. One of the senior staff in the office had work experience in a multilateral development organization, the World Bank. The staff, being strongly aware of the need for and benefits of RSAs, further promoted the use of RSAs and RSIs.<sup>33</sup> The MLIT initiated a nation-wide pilot program in 2015 based on a proposal developed by the Road Safety Management Office. The program was offered to municipal governments and named “road safety diagnosis” (not “audit”) following internal

<sup>33</sup> Based on interviews with MLIT officials on 24 April 2014 in the MLIT headquarters in Tokyo.

discussion in the Road Bureau (MLIT, 2015b). Some municipalities, such as Okayama City, started pilot projects based on this initiative (**Figure 3.9**), and the Road Bureau is further promoting the pilot program.



Source: MLIT (2016b).

**Figure 3.9: Road Safety Diagnosis Pilot Project by Okayama City Government**

### **3.5.3 Further Application and Absorptive Capacity of the Ministry of Land, Infrastructure, Transport and Tourism**

A pilot RSA project in Chiba progressed to a nation-wide pilot program and initial actions towards establishment of a nation-wide system. MLIT officials noted that the breakthrough was brought about by individual officials in the Chiba National Highway Office and the headquarters who had prior work experiences in multilateral development organizations.<sup>34</sup> Such a breakthrough was not made in the late 1990s and early 2000s when the NILIM, as an official gatekeeper of such information, reviewed and recommended application of an RSA system to the MLIT. This section reviews factors that led to successful introduction and initial application of RSAs and how they can be further promoted in domestic road projects in Japan.

The MLIT's organizational culture was characterized to have a strong group dimension such as hierarchy and egalitarianism and was difficult ground for individual innovations (Section

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<sup>34</sup> Based on interviews with MLIT Road Bureau officials on 12 February 2015 in MLIT headquarters in Tokyo.

3.4.1). However, such cultural traits were weakened through the processes of privatization of the expressway corporations and reform of road earmarked budget especially in the Road Bureau, creating a cultural ground where more individual innovations can be brought up. Since the late 1900s and early 2000s, when the gatekeeping information providers for the MLIT introduced the RSA approach and could not have it applied, the RSA approach had been gradually forgotten among MLIT officials. The recent breakthrough was brought about by a small number of individual staff members, who had direct exposure to ODA and other overseas projects.

One of the most important factors for a successful RSA is to have the right team with appropriate expertise (Ram, 2013). The officials who led the Chiba pilot project noted that they consulted with NILIM and other road safety experts to select an appropriate team of experts and eventually utilized TOE and TOP experts certified by the JSTE in addition to academics and a consultant. They noted that the team functioned effectively, and the internal capacity, although not directly realized as absorptive capacity in managing RSAs, was sufficient.<sup>35</sup> The officials in the MLIT headquarters noted that team composition and authority can be further developed through the nation-wide pilot program.<sup>36</sup>

Once the top management commits to implementation of new policies, the MLIT's centralized, top-down decision-making culture can function effectively to implement the policy and achieve broad coverage including some municipal governments. As noted earlier, the MLIT successfully adopted a NPM system as PMRA, initially imitating the practice from the United Kingdom and developing it into a unique system. MLIT officials noted in interviews that even though only a very small number of individuals in the Planning Division of the Road Bureau promoted PMRA quite strongly in the early 2000s, it led to nation-wide application, including some municipal governments, through a top-down manner in a relatively short period.<sup>37</sup> Suzuki (2008) also pointed out that the GOJ's bureaucracy could demonstrate strong operational

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<sup>35</sup> Based on interviews with MLIT Chiba National Highway Office officials on 3 September 2013 and 2 April 2014 in Chiba, Japan.

<sup>36</sup> Based on interviews with MLIT officials on 24 April 2014 in the MLIT headquarters in Tokyo.

<sup>37</sup> Based on interviews with MLIT officials in Road Bureau on 20 February 2014 and 24 April 2014 in the MLIT headquarters in Tokyo.

capability once clear goals were set. It can clearly be observed that the MLIT's Road Bureau has a typical GOJ bureaucracy in this regard. The organization can demonstrate tremendous absorptive capacity once the change—regardless of degree of innovativeness—is accepted as the organizational goal. Therefore, MLIT officials noted that an important factor for successful application of an RSA system should be its acceptance and full commitment by senior management based on further results of the ongoing nation-wide pilot programs.<sup>38</sup>

The Chiba RSA pilot case showed that MLIT's absorptive capacity acquired through Japan's unique road safety implementation scheme, including the five-year plans and various road safety measures, had served as potential absorptive capacity when a pilot RSA project was introduced. Therefore, the potential absorptive capacity for an RSA program could be fully used if not only external auditors, but also the capacity of internal in-house staff, are well utilized in the design of the RSA system in Japan. Another key factor in absorptive capacity is diversity of knowledge. The pilot project in Chiba utilized external experts (TOE and TOP experts and academia) as well as internal capacity in developing the RSA framework. Further involvement of municipalities and traffic police in the nation-wide pilot program would further enhance such diversity and support more tailor-made development of an RSA program in Japan.

In summary, the following were identified as enabling factors for flexible responses of the MLIT:

- (i) individual staff members' bottom-up initiatives under MLIT's organizational culture, where the strong group dimension (collectivism/hierarchy and egalitarianism) was weakened;
- (ii) potential absorptive capacity acquired through Japan's unique road safety measures was utilized; and
- (iii) capacity of external experts was well utilized.

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<sup>38</sup> Ibid.

### **3.6 Other Experiences by the Ministry of Land, Infrastructure, Transport and Tourism**

This section reviews several two cases in which the MLIT responded to external requirements and expectations. These cases are analyzed mainly to verify the factors identified in the main case of the MLIT (Sections 3.1–3.5).

#### **3.6.1 The Innovation Promotion Outline**

In October 2006, the Ministry of Land, Infrastructure and Transport (the English name changed to the Ministry of Land, Infrastructure, Transport and Tourism with an establishment of Japan Tourism Agency in October 2008; hereafter collectively referred to as MLIT) organized an ad hoc “Innovation Promotion Task Force” headed by the administrative vice minister and including about 40 members at the director general level. It was a top-down attempt to promote innovation in various areas of the MLIT’s administration, reflecting the GOJ’s active promotion of innovation in the mid-2000s. In June 2006, the Council for Science and Technology Policy published the Innovation Creation Comprehensive Strategy (Council for Science and Technology Policy, 2006), and in July 2006, the Fiscal and Economic Integrated Reform Conference, created by a strong initiative by then Prime Minister Junichiro Koizumi, published the Economic Growth Strategy Outline that emphasized the importance of innovation in infrastructure development, finance, technology, business management and other fields (Fiscal and Economic Integrated Reform Conference, 2006). In addition, the METI announced the Innovation Super Highway Vision in 2006 (METI, 2006).

The MLIT’s task force collected 160 proposals on innovative measures in the relevant fields from 72 private firms. A mid-term report was prepared in February 2007, and the final report named “Innovation Promotion Outline in the fields of Land, Infrastructure, and Transport” was published in May 2007 (MLIT, 2007b). The Innovation Promotion Outline comprised the following six priority projects with their expected implementation schedule:

- (i) transforming the society to the place where necessary information is accessible for anyone regardless of the time and location,
- (ii) creation of advanced disaster prevention society,

- (iii) maintenance of security and safety through advanced anti-terrorism technology,
- (iv) enhancement of efficiency and safety for logistics supply chains,
- (v) establishment of the worlds' safest road traffic system by utilizing intelligent transport system technology, and
- (vi) introduction of a common integrated circuit (IC) ticket in East Asia.

In terms of road safety (item (v), above), the schedule included the following targets for 2015:

- (a) pioneering the introduction of a support system for safe driving using vehicle-only (autonomous type), vehicle-road, and vehicle–vehicle communication technology, and
- (b) pioneering the adoption of on-board diagnostics by vehicle manufacturers. Such technical progress seems mostly on track with regard to the 2015 targets.

In addition to promoting innovative technologies and their growth projections, the outline emphasized that the MLIT should create an organizational environment where innovations spring up one after another. It also noted that the MLIT should follow up on the progress of the policy measures included in the outline with a proper organizational framework. The outline also stated that the progress of the policy measures should be disclosed comprehensively to the public. The MLIT, with its large size and responsibility for administrating industries with enormous vested interests, tends to be a difficult ground for innovation, and the proposal in the outline would be a notable top-down attempt to change the organizational culture. According to the MLIT's division staff responsible for the initiative<sup>39</sup>, the Innovation Promotion Task Force convened on 29 June 2007 and established five working groups to monitor the progress. The task force had follow-up meetings in 2008 and 2009, at which mainly discussed were the status updates reported by the working groups. However, no further follow-up meetings or actions have happened thereafter. Also, the follow-up status has not been reported to the public; even the working group status updates reported at the initial meetings in 2008 and 2009 have not been disclosed. Likewise, the outline and its contents were no longer acknowledged among MLIT staff members after a few years from its announcement.<sup>40</sup> MLIT's Policy Bureau noted

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<sup>39</sup> Based on interviews with staff from the Policy Bureau in January–February 2017 through telephone and emails.

<sup>40</sup> Based on interviews with 13 MLIT officials in January–December 2017.

there has been no clear impacts made by the outline in terms of the organizational culture, where innovations were intended to spring up one after another.

Despite general progress in the relevant innovative technologies and the intent of the Innovation Promotion Outline, there is unfortunately no clear indication that the outline had an intended impact on the MLIT's organizational culture to create an environment where innovations spring up one after another. However, the top-down message promoting innovation could have worked favorably to create an innovative organizational culture if MLIT management had continuously followed up on the outline. In August 2016, the GOJ established the Council for Science, Technology, and Innovation headed by Prime Minister Shinzo Abe, adding "innovation" to the former Council for Science and Technology (Cabinet Office, 2016). Such top-down movements may gradually influence the organizational culture of the GOJ and MLIT.

### **3.6.2 Airport Management Reform**

The MLIT established the Airport Management Reform Promotion Office in April 2012 to enhance reforms in the airport business, specifically in the 28 airports that the MLIT was managing directly. The other 69 commercial airports in Japan, which were managed by airport companies (4 airports) or municipal governments (65 airports), were not included in the mandate of the reform office. The office was established in a rather unique setting to enhance innovation. Most of the members were external experts—the office started with 9 staff, of which 7 members (78%) were from the private sector, including fixed-term employees (a business consultant, a certified public accountant, and a lawyer) and secondees through public-private exchanges from organizations such as an investment bank and a real estate and securities companies. The office had 12 members as of February 2017 and still maintains the high ratio of non-bureaucrats with 8 such members (67%) at that time.

The externally-recruited staff noted about the unique MLIT organizational culture that "there is no clear sense of output targets," "job descriptions for staff are very vague," and "decision-making takes a very long time" (Inoue, 2013). The office members took actions to improve the

culture by: (i) setting clear time-bound targets and (ii) changing to a flatter decision-making process. The members even changed the office layout to enhance internal communication: the MLIT offices usually have large rooms with desks clustered into groups (called “islands”), but the airport reform office turned the desks around to face the walls so that staff could sit closer together and communicate with one another more easily when necessary. Through discussions among the members, the office set the targets of (i) reaching agreements on the management integration of various facilities with at least two airports by March 2014 and (ii) initiating a concession to the private sector in one airport by March 2016 (Inoue, 2013).

The office contributed to the adoption of “The Law on the Operation of the Country Management Airports Utilizing the Capacity of the Private Sector” in June 2013. This law would serve as the basis for the intended airport management reforms. As of February 2017, implementation policies had been prepared for two airports (Sendai Airport in April 2014 and Takamatsu Airport in July 2016), and the contract was signed for one airport (Sendai Airport in December 2015). A special purpose company started its operation in Sendai Airport in February 2016 for the terminal building and in July 2016 for other facilities based on the contract. Market sounding started for Fukuoka Airport in July 2016. According to the office, the next targets were several airports in Hokkaido (to be bundled together), Kumamoto Airport, and Hiroshima Airport. Most of the initial targets were successfully achieved.

As pointed out by Inoue (2013) and confirmed by the current office staff<sup>41</sup>, contributing factors for the successful initial operations of the airport reforms are: (i) utilization of external experts and (ii) cultural change brought about by the external experts, who questioned drawbacks of the Kasumigaseki culture, and internal MLIT staff, who promoted the proposed changes. This can be noted as an example of innovation effectively enhanced through changes to organizational culture brought about by external experts.

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<sup>41</sup> Based on interviews with staff from the Airport Bureau in January–February 2017 through telephone.

### 3.7 Findings and Discussions

This section mainly reviews the adoption of RSAs in Japan from the perspectives of the organizational culture and absorptive capacity of the MLIT, in particular: (i) why did Japan not apply an RSA approach despite its worldwide application and Japan's promotion of it in developing countries through bilateral and multilateral ODA initiatives, and (ii) how can Japan successfully implement an RSA system given its current success with pilot programs. Other experiences of the MLIT were also reviewed—namely, creation of the Innovation Promotion Outline in 2007 and establishment of the Airport Management Reform Promotion Office in 2012.

The Road Bureau of the MLIT turned out to have strong traits typical of Kasumigaseki culture, which include closedness, gatekeeping of information inflow, and centralized/top-down decision-making. It also had relatively smaller engagement with and interest in international affairs compared to other similar bureaus within the ministry. This organizational culture made the bureau devote itself to promoting NPM/PMRA, which had been recommended together with an RSA approach, had an independently positive impact on road safety, and resulted in the non-application of RSAs. However, the organizational culture had gradually changed to weaken its closedness and group dimension through the processes of privatization of the expressway corporations and reform of the road earmarked budget. A recent breakthrough with RSA pilot programs was brought about by the efforts of individual staff members, not by the gatekeepers of information inflow. In an organization like the MLIT and in areas of jurisdiction where substantial realized and potential absorptive capacity exist, innovative and effective responses to external requirements or expectations are possible with individually-led or bottom-up initiatives, not necessarily through gatekeepers of information, as observed in the cases of PMRA and the airport management reform office. Although large scale top-down attempts, such as the case of the Innovation Promotion Outline, may not provide effective innovation or breakthroughs in specific areas, such promotion may nonetheless contribute to changing the overall organizational culture, which is often associated with closedness and bureaucracy, the opposite of innovation, change, and creativity.

There are some positive factors that may contribute to the further implementation of an RSA approach following the recent emergence and success of pilot programs. First, the MLIT already has significant potential absorptive capacity with regard to such an approach. Although most staff members are unaware of the concept and methodologies of RSAs, and a framework of official auditing does not exist, past studies by the NILIM and other researchers are still valid and applicable in the current institutional setting and in road development and management practices. As the Chiba office demonstrated, the MLIT's national highway offices should have sufficient potential capacity and expertise to coordinate an RSA system, and such in-house capacity should be utilized in addition to the development of external auditors. Therefore, past studies and potential in-house capacity should be further applied and enhanced based on the results of the ongoing pilot programs. Second, the MLIT's organizational culture enables innovation from imitation, as was the case in NPM, where a unique PMRA system was developed including the road safety measures. The initial pilot program in Chiba Prefecture started as an imitation of ADB and other international practices. The program was gradually modified to fit the circumstances in Japan, such as using TOE and TOP experts and changing the terminology from "auditing" to "diagnosis." Third, the broad influence of the MLIT's centralized, top-down decision-making culture—which extends not only to the national highway offices, but also to some municipal governments—should quickly enhance the diversity of knowledge and experience through the nation-wide pilot program. As diversity enhances strong absorptive capacity, further involvement of municipal governments and other stakeholders should be another key factor in the successful implementation of an RSA system that fits the needs of Japan.

Finally, it is recommended that the MLIT should promote breakthroughs by individual staff members and learning from international good practices in other policy areas to fully realize the potential of the changes occurring in its culture, i.e., reduced closedness and information gatekeeping. Such breakthroughs and learning would enhance the diversification of knowledge and the absorptive capacity of the organization.

Several facts and observations about the reviewed cases were of interest from the organizational culture and absorptive capacity perspectives. **Table 3.4** summarizes the

identified contributing factors for innovative and flexible responses to the external requirements and expectations in the cases of the Ministry of Land, Infrastructure, Transport and Tourism.

**Table 3.4: Identified Contributing Factors from the Cases of the Ministry of Land, Infrastructure, Transport and Tourism**

<b>Contributing Factors</b>	<b>Case 4: Application of Road Safety Audits</b>	<b>Case 5: Innovation Promotion Outline</b>	<b>Case 6: Reform of Nationally Managed Airports</b>
Open and flexible organizational culture (weakening of the grid dimension)			+
Individualized culture (weakening of the group dimension)	+	-	+
Utilization of potential absorptive capacity	+		
Utilization of realized absorptive capacity			
Utilization of external capacity	+		+

Note: The mark “-“ indicates that no clear intended impacts were identified. In other words, it cannot be counted as a contributing factor despite its intention.

Source: Author.

## Note

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## Chapter 4

# Conclusions and Policy Implications

### 4.1 Conclusions

This dissertation provides an organizational analysis of two unique parts of the government of Japan (GOJ) through six case studies, three cases each from the Ministry of the Environment (MOE) and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), focusing on unprecedented and innovative responses to external requirements and expectations from the perspectives of organizational culture and absorptive capacity. As introduced in Chapter 1, ambiguity remains in the studies of organizational culture and absorptive capacity, especially in public sector organizations (Zahra & George, 2002; Klarner, Probst, & Soparnot, 2008), and more research is required to show the influence of organizational design and individual-level factors (Volberda, Foss, & Lyles, 2010). The previous chapters provided concrete case studies of organizational culture and absorptive capacity in two public sector organizations in Japan. The case studies also examined organizational design and individual factors related to the relevant staff members.

The findings from each case study can be summarized as in **Table 4.1**. In each case, the policy formulation processes were reviewed, and facts based on interviews, dialogues, and observations were recorded. Based on these facts, contributing factors were analyzed, and the conclusions were drawn mostly through abductive reasoning.

**Table 4.1: Summary Findings from the Case Studies**

<b>Cases</b>	<b>Required/expected organizational responses</b>	<b>Organizational culture and absorptive capacity findings</b>
<p>1. Transport of radioactive soil and wastes to Fukushima ISF (Chapter 2, Sections 2.2, 2.3)</p>	<p>The MOE was required to plan and implement unprecedented transport of large amounts of radioactive soil and waste to ISF.</p>	<p>Organizational culture with friendliness and openness and flat decision-making enhanced utilization of secondees and other externally-recruited staff. The secondment arrangement with the MLIT worked favorably.</p> <p>Potential absorptive capacity from pollution-related diseases and realized absorptive capacity in PCB treatment and transport contributed positively.</p>
<p>2. Formulation of the Basic Environment Law (Chapter 2, Section 2.4.1)</p>	<p>The MOE was expected to create a new law to accommodate emerging environmental issues.</p>	<p>Flexible staff management including the appointment of the director from the MOF and dual-appointments (“human hunting”) enhanced diverse absorptive capacity.</p> <p>The MOE overcame strong sectionalism present in the GOJ through political top-down decisions and use of an external committee.</p>
<p>3. Establishment of the Carbon Tax and responses to climate change (Chapter 2, Section 2.4.2)</p>	<p>The MOE was expected to take measures on climate change, including the use of economic instruments as global concerns grew, especially after the adoption of the Kyoto Protocol.</p>	<p>The MOE responded with flexibility and careful consideration of the priorities of other ministries and stakeholders.</p> <p>The Basic Environment Law provided a breakthrough, but establishment of the Carbon Tax took many more years.</p> <p>Absorptive capacity on energy-saving technologies grew gradually through the years through cooperation projects with other ministries.</p> <p>The secondment arrangement with the MOF worked favorably.</p>

<p>4. Adoption of RSAs (Chapter 3, Sections 3.2–3.5)</p>	<p>The MLIT was expected to adopt RSAs as they are considered an international good practice and the GOJ is promoting their use to developing countries through ODA.</p>	<p>The MLIT’s gatekeeping information flow enabled introduction of NPM as PMRA but not RSA. MLIT’s recent pilot programs resulted from individual-level breakthroughs, not from information gatekeepers. Strong potential absorptive capacity in road safety and the top-down decision-making culture make for potentially smooth and quick adoption.</p>
<p>5. Formulation of the Innovation Promotion Outline (Chapter 3, Section 3.6.1)</p>	<p>The MLIT initiated the formulation of the outline in a top-down manner reflecting the GOJ’s strong interest in innovation.</p>	<p>Inclusion of proposals from the public sector and the ministry-wide efforts progressed innovative technical development, but no clear effects on the intended innovative culture/environment creation were found. Top-down efforts are necessary, but bottom-up and individual-level approaches are more effective for the creation of innovative breakthroughs in an organization.</p>
<p>6. Reform of the nationally managed airports (Chapter 3, Section 3.6.2)</p>	<p>The MLIT was expected to reform management of its airports.</p>	<p>Externally recruited specialists changed the organizational culture within the office and successfully achieved most of the initial targets.</p>

GOJ = government of Japan, ISF = interim storage facility, MLIT, = Ministry of Land, Infrastructure, Transport and Tourism, MOE = Ministry of the Environment, MOF = Ministry of Finance, NPM = new public management, ODA = official development assistance, PMRA = public management of road administrations, RSA = road safety audit.

Source: Author.

The GOJ's general organizational culture is known as "Kasumigaseki culture," characterized by closedness, mutuality, and gatekeeping of information flow, and is not a suitable ground for innovation. However, the case studies showed that innovative responses to external requirements and expectations can be brought about through changes in the organizational culture, strong initiatives by individuals or small groups, and effective use of absorptive capacity.

In terms of organizational culture, the openness and friendliness culture in the MOE, especially toward secondees and externally-recruited staff, benefitted the innovative and flexible responses to the unprecedented challenges caused by the Fukushima Dai-ichi nuclear accident. The MOE's flat decision-making structure also enhanced quick and flexible responses. Flexible personnel management at the MOE was observed in the cases of the Fukushima Interim Storage Facility (ISF) and the Basic Environment Law, such as the appointment of secondees from other ministries in key positions and a "human-hunt" of various internal staff to dual-appoint them to the new positions. Such flexible management and use of external staff contributed to the successful results. However, flexibility may not always lead to successful results. In the case of the Carbon Tax, some criticized the MOE for paying too much consideration to opposing other ministries and industries, and the resulting tax rate was criticized as being too low to create meaningful effects on greenhouse gas emissions.

The MLIT's administrative authority is one of the largest in the GOJ ministries. Its organizational culture was found to be stable and detail-oriented than people and innovation-oriented as Chatman and Jehn (1994) found in their study of the public sector and transport industries. A top-down attempt to promote an innovative environment within the ministry through the Innovation Promotion Outline did not create clear impacts on the culture. However, individual-level initiatives, as in the cases of road safety audits and the Airport Management Reform Promotion Office, brought about innovative

changes. Diversity of staff, including the use of external experts, such as the case of the airport management reform, appears to be an enabling factor for innovative responses.

Absorptive capacity also played an important role in the responses of the ministries. The MOE effectively applied potential absorptive capacity from the management of pollution-related diseases and realized absorptive capacity from the treatment and transport of polychlorinated biphenyl to the planning and implementation of transport to the ISF. The MOE built up its absorptive capacity through cooperative projects in energy conservation technologies before the establishment of the Carbon Tax so that such capacity could be fully utilized in the projects funded with the revenues from the Carbon Tax. The MLIT utilized the potential and external capacities of in-house engineers in road safety enhancement and existing certified experts in lieu of road safety auditors, which did not exist in Japan.

The contributing factors identified from the case studies are summarized as **Table 4.2**. The working hypotheses established in Section 1.2 are shown to be the best possible explanations for the observed innovative or flexible responses of the GOJ organizations through the case studies. The following conclusions are derived.

- (i) Weakening of the group and grid dimensions towards individualism (**Figure 1.1**) contributed innovative and flexible responses under the GOJ's unique organizational culture. The cases 1, 2, and 6 showed weakening of the grid dimension is effective while the cases 1, 4, and 6 showed weakening of the group dimension is effective. In the case 5, the MLIT intended to promote innovation with an enhanced group dimension, but the intended results were not achieved.
- (ii) When weakening of the group dimension enhanced exposure to external information by numerous individuals, instead of gatekeeping by a small number of designated individuals, the enhanced exposure contributed to innovative and flexible responses as shown in the case 4.

- (iii) A full utilization of realized and potential absorptive capacity within organizations contributed to the effectiveness of organizational responses. The cases 1, 3, and 4 showed utilization of potential absorptive capacity effective while the case 1 showed utilization of realized absorptive capacity effective.
- (iv) Use of external capacity is necessary for the expertise that lacks within the organizations. In relation to the item (ii) above, lack of expertise within the GOJ organization should be complemented by external experts. Use of external experts sometimes changes the culture of the organization as well.

**Table 4.2: Identified Contributing Factors from the Case Studies**

Organization	Ministry of the Environment			Ministry of Land, Infrastructure, Transport and Tourism			
	Cases	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Open and flexible organizational culture (weakening of the grid dimension)		+	+				+
Individualized culture (weakening of the group dimension)		+			+	-	+
Utilization of potential absorptive capacity		+		+	+		
Utilization of realized absorptive capacity		+					
Utilization of external capacity		+	+	+	+		+

Note: The mark “-“ indicates that no clear intended impacts were identified. In other words, it cannot be counted as a contributing factor despite its intention.

Source: Author.

#### 4.2 Discussions and Policy Implications

Organizational culture and absorptive capacity can be key factors in an organization’s responses to external requirements and expectations. As the culture of the GOJ is often

associated with closedness and mutuality, the promotion of a culture which enables more innovation should be considered for non-routine requirements and expectations where ordinary solutions are not likely to be relevant or effective. Such cultural change is not easy to bring in through a top-down manner, but creating a flat decision-making structure and diversifying information and knowledge management to enable more diverse exposure, instead of gatekeeping, can be examples of enabling factors. However, as innovations are often brought about by individuals or small groups, flexible personnel management including the use of external experts should be encouraged. Recently, more ministries have been recruiting mid-career experts, and this can be a factor promoting innovation and culture change. Absorptive capacity comprises potential and realized capacities. It is not easy to identify potential absorptive capacity and use it effectively, but it can be utilized through close communication within an open and friendly organizational culture, as observed in the case of transport to the ISF.

Strong and stable cultures, even the notorious Kasumigaseki culture, can be beneficial to organizations in some tasks and mandates. However, such strength or stableness sometimes leads to stagnation and affect the organization's performances by not flexibly adjusting to changing environments or emerging challenges. On the other hand, weakness in organizational culture sometimes leads to lack of internal integrity to effectively achieve organization's tasks. It was observed in the case of MLIT's RSA that Road Bureau's strong cultural traits in closedness and group dimension were weakened through strong external criticisms in the processes of express corporations' privatization and road earmarked budget reform. Yamada (1991) pointed out issues associated with strong and weak organizational cultures and importance of flexibly changing strong organizational culture through maintenance of organizational identity. In various case studies in this dissertation, utilization of external experts was identified as a contributing factor for innovative and flexible responses of the GOJ (**Table 4.2**). One may argue that ad hoc organizations like various Cabinet Office departments can be an ideal ground for such performances as they mostly comprise external secondees from various line

ministries. However, the author discusses that such organizations tend to have too weak organizational culture to form a solid identity to share the organizational common goals or operational directions throughout the organizations. In case of ISF, although the relevant staff are dominated by external experts, clear operational directions stemmed from the unprecedented challenge must have compensated for the weakened organizational culture.

In summary, the following policy recommendations are proposed: (i) organizational culture and absorptive capacity should be considered as key factors in an organization's responses to external requirements and expectations, (ii) enabling of cultural factors that support innovative responses to non-routine requirements and expectations (e.g., reducing closedness and mutuality; enhancing flat decision-making) should be promoted to GOJ organizations, and (iii) not only realized but also potential absorptive capacities should be considered to maximize organizational performance.

## Note

The English translations of the Japanese laws, organization names, and other proper nouns were taken from the English websites of respective ministries and organizations unless otherwise noted.

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