**JCR Sustainable Evaluation** 

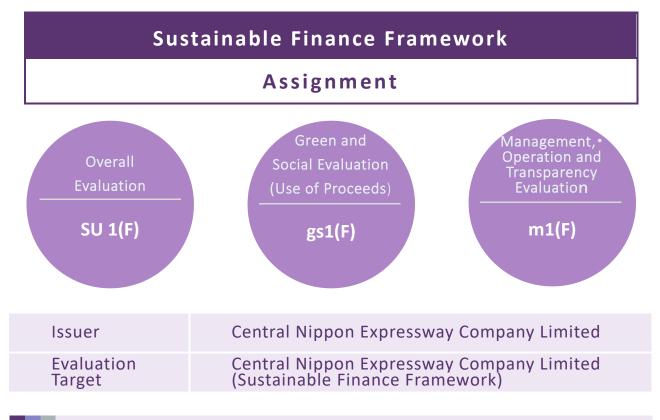
23-D-1562 February 20, 2024

Japan Credit Rating Agency, Ltd. (hereinafter referred to as "JCR") will announce Sustainability Bond Framework Evaluation Results as

NEWS RELEASE

follows:

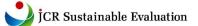
## Central Nippon Expressway Company Limited



## **Evaluation Overview**

#### ▶▶▶1. Overview of Central Nippon Expressway Company Limited

Central Nippon Expressway Company Limited (hereinafter referred to as "NEXCO CENTRAL" or "the Company") is a special company wholly owned by the government. The operating base of NEXCO CENTRAL covers traffic routes from the Tokyo metropolitan area to Chubu and Kinki regions, including the main routes, such as TOMEI EXPWY, CHUO EXPWY and SHIN-TOMEI EXPWY in the nationwide route network owned by Japan Expressway Public Corporation. The Company has mainly operated the expressway projects to construct and mange/operate expressways and has also worked on related businesses, including management of Service Area (hereinafter referred to as "SA") and Parking Area (hereinafter referred to as "PA." The Company has operated



its businesses based on its group management with 23 subsidiaries and 9 affiliated companies as of December 31, 2023.

## **>>>** 2. NEXCO CENTRAL's ESG Management and Sustainability Initiatives

NEXCO CENTRAL Group (hereinafter referred to as "the Group") has set forth "Control of global warming and consideration for local environment" as one of the key themes of its CSR activities. The Group reflected the CSR priority themes in its management plan, set up its environmental policy and established measures in line with the policies, "Prevention of global warming," "Promotion of 3R of resources" and "Consideration for the local environment." NEXCO CENTRAL reflected the key themes in the aforementioned CRS activities in its business activities and set forth the following four management policies:

Management Policy 1: Deepening sustained efforts to improve safety

Management Policy 2: Strengthening the functions of expressways and evolving them into expressways that are widely used by customers

Management Policy 3: Challenging ourselves to create new value adapted to environmental changes such as digitalization and decarbonization

Management Policy 4: Strengthening our management base to continue to meet the expectations of customers and other stakeholders

#### ▶ ▶ 3. Sustainable Finance Framework

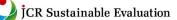
NEXCO CENTRAL has recently stipulated a sustainable finance framework (hereinafter referred to as "this framework") that will use the proceeds for the following projects to alleviate damage from natural disasters, such as storm and flood disasters or earthquakes, which have been intensifying due to recent climate change.

(Green Bond)

- (1) Construction on bridges in large-scale renewal projects and repair projects
- (2) Construction on earthwork structures (slopes) in large-scale renewal projects and repair projects
- (3) Construction on porous asphalt pavements on expressways

(Social Bond)

(1) Repair projects to weaken the power of disasters and minimize damage (bridges, earthwork structures (slopes,) facilities for snow and ice control measures, earthquake disaster countermeasures)



- (2) Repair projects to protect users through promptly distributing information to prevent secondary disasters (electric equipment, communication facilities or architectural facilities)
- (3) Repair projects to safely evacuate users involved in disasters (tunnel disaster prevention/tunnel facilities)
- (4) A four-lane project that will benefit neighboring residents by preventing expressways blockage and enabling prompt road restoration in case of a disaster (however, it should be contribute to widening the existing roads and maintaining redundancy of road functions.)

Consequently, NEXCO CENTRAL aims to promote its ceaseless efforts toward the improvement of safety as stipulated in its Management Policy 1 in accordance with "Recommendations of expressway technical review committee on long-term maintenance and renewal of expressway assets" and "NEXCO CENTRAL Infrastructure Life Extension Plan (Action Plan)." JCR will evaluate whether this framework is aligned with "Green Bond Principles<sup>1</sup>," "Social Bond Principles<sup>2</sup>," "Sustainability Bond Guidelines<sup>3</sup>," "Green Bond Guidelines<sup>4</sup>" and "Social Bond Guidelines<sup>5</sup>."

NEXCO CENTRAL has exclusively limited the eligibility criteria for green/social bonds investments to the following projects that contribute to climate change adaptation and projects that provide benefits to people to be affected by disasters in this framework.

JCR has confirmed that the aforementioned eligibility criteria established by NEXCO CENTRAL have adequately examined risks assumed by the long-term forecasts of global warming by the end of the 21st Century on the condition of the RCP8.5 scenario for the use of proceeds financed through green bond, and that these projects have had appropriate mitigation effects for risks. JCR has also confirmed that the proceeds through social bond will be used for projects that are expected to reduce and mitigate damage to human and cargo shipment in case of a disaster for people to be affected (road users and residents in neighboring areas) by disasters including natural disasters other than climate change adaptation on the existing roads. JCR has evaluated that the projects selected according to the eligibility criteria will contribute to the "development of a safe and reliable road network" and national resilience specified by the Ministry of Land, Infrastructure, Transport and Tourism (hereinafter referred to as "MLIT") for roads among transportation infrastructure. JCR has evaluated that the project selection processes, the structure to manage proceeds or the post-issuance reporting system have been well established and kept high transparency.

Accordingly, as for this framework, JCR assigned "gs1 (F)" to "Green Evaluation (Use of Proceeds)" and "m1 (F)" to "Management, Operation and Transparency Evaluation" based on JCR Sustainability Finance Evaluation Methodology. Consequently, JCR assigned "SU 1(F)" to "JCR

<sup>&</sup>lt;sup>1</sup> Green Bond Principles by International Capital Market Association (ICMA) at

https://www.icmagroup.org/assets/documents/Sustainable-finance/2022-updates/Green-Bond-Principles-June-2022-060623.pdf <sup>2</sup> Social Bond Principles by ICMA at https://www.icmagroup.org/assets/documents/Sustainable-finance/2023-updates/Social-

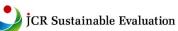
Bond-Principles-SBP-June-2023-220623.pdf

<sup>&</sup>lt;sup>3</sup> Sustainability Bond Guidelines by ICMA at https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-

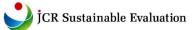
updates/Sustainability-Bond-Guidelines-June-2021-140621.pdf

<sup>&</sup>lt;sup>4</sup> Green Bond Guidelines by Ministry of the Environment at https://www.env.go.jp/content/000062495.pdf

<sup>&</sup>lt;sup>5</sup> Social Bond Guidelines by Financial Services Agency at https://www.fsa.go.jp/news/r3/singi/20211026-2/01.pdf



Sustainability Bond Framework Evaluation (Overall Evaluation)." The evaluation results will be detailed in the next chapter. JCR has evaluated that this framework satisfies the criteria for items required in "Green Bond Principles," "Social Bond Principles," "Sustainability Bond Guidelines," "Green Bond Guidelines" and "Social Bond Guidelines."



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## Chapter 2: Alignment with Green Bond Principles or Social Bond Principles

Evaluation Phase 1: Green/Social Evaluation

gs1(F)

## I. Use of Proceeds

## JCR's Key Consideration in this Factor

In this section, firstly, JCR will confirm whether the proceeds have been allocated to projects with clear environmental benefits or social benefits. Then, in cases where the use of proceeds is expected to have negative impacts on the environment or society, the impacts have been thoroughly examined by an internal specialized department or an external third-party institution and necessary workarounds and mitigation measures have been taken. Lastly, JCR will confirm whether the proceeds is aligned with the Sustainable Development Goals (hereinafter referred to as "SDGs".)

## **Description** Current Status of Evaluation Target and JCR Evaluation

The projects for which NEXCO CENTRAL will use proceeds in this framework are measures that contribute to developing a sustainable society, its corporate philosophy and are expected to have environmental or social benefits.

#### This Framework for Use of Proceeds and Eligibility

Use of Proceeds

<Summary of Use of Proceeds>

<Green Bond>

- The following projects will improve the resilience of expressway infrastructure managed by NEXCO CENTRAL against natural disasters (typhoons, floods or storm surges) that have been exacerbated by recent climate change.
- · Construction on bridges in large-scale renewal projects and repair projects
- · Construction on earthwork structures (slopes) in large-scale renewal projects and repair projects
- · Construction on porous asphalt pavements on expressways (hereinafter referred to as "porous asphalt pavements")

<Social Bond>

The following projects that will bring about benefits to expressway users in case of a disaster:

- Repair projects to weaken the power of disasters and minimize damage (bridges, slopes, snow and ice protection facilities and earthquake disaster measures)
- Repair projects to protect users through prompt information transmission to prevent secondary disasters (electrical facilities, communication facilities and architectural facilities)
- Repair projects to safely evacuate users involved in disasters (tunnel disaster prevention and tunnel facilities)

The following projects that will provide neighboring residents with benefits by preventing blockage of expressways in case of a disaster and enabling prompt road restoration.

- Four-lane projects (exclusively limited to projects that contribute to widening the existing roads and maintaining redundancy of road functions\*)
- \*The projects that will reduce risks of blockage of roads by increasing two lanes to four, such as construction in areas where there are risks of landslides or slope collapse in case of a disaster.

**Eligibility Criteria** 

Projects to which proceeds will be allocated are expected to operate sound business whose risks have been verified in light of the Company's screening criteria and shall meet the following eligibility criteria.

<Green Bond>

(Guidelines, plans or agreements with organizations)

<Large-scale renewal projects>

- Recommendations of expressway technical review committee on long-term maintenance and renewal of expressway assets (January 22, 2014)
- · Large-scale renewal/repairs on expressways managed by East Nippon Expressway Company Limited (hereinafter referred to as "NEXCO EAST,") NEXCO CENTRAL and West Nippon Expressway Company Limited (hereinafter referred to as "NEXCO WEST") (January 22, 2014)
- The MLIT Action Plans for Life Extension of Infrastructure from FY 2014 to FY 2020 (May 21, 2014)
- NEXCO CENTRAL Infrastructure Life Extension Plan (Action Plan) from FY 2014 to FY 2020 (March 31, 2015)
- MLIT Action Plans for Life Extension of Infrastructure from FY 2021 to FY 2020 (June 18, 2021)
- NEXCO CENTRAL Infrastructure Life Extension Plan (Action Plan) from FY 2021 to FY 2020 (December 2021)



- Interim report of the expressway technical review committee on long-term maintenance and renewal of expressway assets (January 30, 2020)
- · Renewal plan (outline) of NEXCO (EAST, CENTAL and WEST) (January 31, 2020)
- · Agreement on the National Expressway Central Automobile Route Fuji-Yoshida Line
- <Repair Project>
- · Guidelines for maintenance and inspection (April 2020)
- · Guidelines for facility maintenance management (April 2020)
- · Basic plan for safety and security on expressways (September 10, 2019)
- · Implementation plan for safety and security on expressways (December 20, 2019)
- MLIT Action Plans for Life Extension of Infrastructure from FY 2021 to FY 2020 (June 18, 2021)
- · NEXCO CENTRAL Infrastructure Life Extension Plan (Action Plan) (December 2021)
- · NEXCO CENTRAL Individual Facilities Plan (Road Facilities) (December 2020)
- · Agreement on the National Expressway Central Automobile Route Fuji-Yoshida Line

<Porous asphalt pavements>

- · "Technical Standards on Pavement Structures" (No. 48, No. 55, June 29, 2001)
- · Design Guidelines for NEXCO CENTRAL

#### (Eligibility Criteria)

- The project shall be expected to enhance its disaster prevention functions by renovating or intensifying aging facilities in response to the degree of damage assumed caused by natural disasters, such as typhoons, floods or storm surges due to climate change effects.
- The project is expected to be resilient against extreme weather or weather disasters due to climate change effects.
- The environmental impact assessment or other technical examination required for the implementation of the relevant construction shall be conducted.
- Preliminary explanations shall be provided to neighboring residents, and there shall be no particular dispute.
- $\cdot$  The look-back period for the project to be refinanced shall be one year.

(Summary of Each Project)

<Large-scale Renewal Projects and Repair Projects>



Construction to keep the expressway network functions healthy for a long period by taking necessary and effective measures from the viewpoint of minimizing the life cycle costs, preventive maintenance and performance improvement of the main body structure of expressways.

Work for repair and reinforcement where appropriate after conducting various inspections and examinations.

1-1 Construction on Bridge

(Risk)

The application amount of the anti-freezing agent (sodium chloride) in winter has been on the increase year by year, and, in particular, the application amount tends to increase in icy elevated sections. It is therefore assumed that RC (reinforced concrete) floor slabs are damaged by salt including anti-freezing agents, and deterioration such as cracks under floor slabs occurs due to corrosion of reinforcing steel.

(Examples of Measures (Specific Construction Contents))

- Waterproofing of high-performance floor slabs to prevent deterioration due to permeation of water and chloride
- Replacement with more resistant PC (pre-stressed concrete) floor slabs and change/repair of floor slabs

(Reference) Renovation of PC Floor Slabs

• Prevention of floor slabs deterioration due to infiltration of water or chloride from road surfaces

The fatigue life caused by wheel loads of the RC floor slabs between dry and wet is roughly 100 times different, unveiled in the previous research.

Therefore, the Company has rendered RC floor slabs waterproof in order to prolong the service life; however, the durability is unlikely to be improved even if making them waterproof in the RC floor slabs which have already deteriorated; therefore, it has improved the durability by replacing RC floor slabs with PC floor slabs in large-scale renewal construction.

1-2 Construction of Earthwork Structure (Slope)

(Risk)

The frequency of short-term anomalous rainfall will increase due to the climate change, which makes water levels in slopes raise and disasters will occur caused by slope collapse.

(Examples of Measures (Specific Construction Contents))

• In cases where water is risen in embankments or these embankments are high, the Company will improve drainage facilities to stabilize these embankments.



• Reinforce slopes by reconstructing ground anchors to stabilize cut slops for a long-term.

(Reference) Construction of Fill Slope and Cut Slope

(Specific Relationship of Earthwork Renewal Project (Drainage Ditches or Anchors))

Large-scale renewal projects on earthwork are to reinforce cut slopes or fill slopes with collapse factors and to renew incidental facilities based on past disaster cases.

Specifically,

- For cut slopes, ground anchors with low anticorrosive performance will be renewed to those with high anticorrosive performance.
- For a small section of drainage ditch, wastewater treatment capacity will be improved with a larger drainage cross section by replacing the small section of drainage ditch (its inner width is 180mm or 240mm) installed based on the design procedures prior to 1983 will be replaced with the one under the current standards (its inner width is 300mm.) With this replacement, the drainage treatment capacity is estimated to increase by roughly 2 to 4 times.

<Porous Asphalt Pavement>

(Risk)

Increases in extreme weather caused by climate change increases anomalous rainfall for a short time and increases risks of accidents.

(Measures (Specific Construction Details))

· Construction of porous asphalt pavements with higher drainage performance than the conventional ones

(Reference) Porous Asphalt Pavement

Drainage pavements (porous asphalt pavements) has been tried out as measures against traffic accidents in rainy days since 1989, which have been expanded nationwide to the present after confirming the excellent effects.

The porous asphalt pavements are to keep approximately 20 percent porosity. The porosity is 8mm for the surface with 4cm thickness based on a simple calculation (40mm × 20 percent = 8mm.) This means that rainwater can be stored and passed through to a rainfall intensity of 8mm/h.

The porosity has kept 20 percent from the perspective of functionalities (water permeability) based on the past results.

<Social Bond>

(Guidelines, Plans or Agreements with Organizations)

#### <Repair Project>

- · Guidelines for maintenance inspection (April 2020)
- · Guidelines for facilities maintenance management (April 2020)
- · Basic plan for safety and security on expressways (September 10, 2019)
- · Implementation plan for safety and security on expressways (December 20, 2019)
- MLIT Action Plans for Life Extension of Infrastructure from FY 2021 to FY 2020 (June 18, 2021)
- NEXCO CENTRAL Infrastructure Life Extension Plan (Action Plan) from FY 2021 to FY 2020 (December 2021)
- · NEXCO CENTRAL Individual Facilities Plan (Road Facilities) (December 2020)
- · Agreement on the National Expressway Central Automobile Route Fuji-Yoshida Line.
- <Four-lane Project>
- · Basic plan for safety and security on expressways (September 10, 2019)
- · Implementation plan for safety and security on expressways (December 20, 2019)
- · Agreement on the National Expressway Central Automobile Route Fuji-Yoshida Line.

(Eligibility Criteria)

<Repair Project>

- Projects shall be expected to minimize damage on expressways caused by disasters (earthquakes, typhoons, floods or snowfall) and enforce disaster prevention/mitigation functions.
- Projects shall be expected to promptly transmit information to expressway users and prevent secondary disasters in case of a disaster.
- · Projects shall be able to safely evacuate expressway users in case of a disaster.
- <Four-lane Project>
- · Projects shall be designed to prevent blockages of roads and enabled prompt road restoration.

The above projects shall satisfy all of the followings:

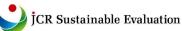
- The environmental impact assessments and other technical examinations necessary for the implementation of the target construction shall be conducted.
- $\cdot$  There shall be no particular dispute with the understanding of neighboring residents.



· The look-back period for the project to be refinanced shall be one year.

(Examples of Measures (Specific Construction Contents))

- <Repair Project>
- 3-1 Bridge
- · Replacement of bridge bearings to reinforce bridge resistance
- 3-2 Slope
- · Installation of fences to prevent inflow of debris from slopes
- 3-3 Snow and ice protection facilities
- Installation, renewal and repair of snow and ice protection facilities such as snow melting equipment to minimize damage caused by snowfall
- 3-4 Earthquake Disaster Measures
- Seismic reinforcement work, such as reinforcing bridge piers to enforce the durability of bridges or installing equipment to prevent the collapse of bridges
- 3-5 Electrical Facilities
- Renew and repair each equipment such as road information boards to promptly transmit information to expressway users in case of a disaster
- Renew and repair power receiving and distribution equipment or privately owned electrical power facilities to supply electricity to each equipment such as road information boards
- 3-6 Communication Facilities
- Renew and repair transmission facilities to communicate with various equipment such as road information boards, monitoring and control facilities at road control centers
- 3-7 Building Facilities
- · Newly construct or renovate management facilities that serve as disaster prevention bases
- 3-8 Tunnel Disaster Prevention
- Install evacuation tunnels that enable expressway users to safely evaluate in case of a tunnel disaster or reinforce ventilation equipment or emergency facilities in tunnels
- 3-9 Repair Tunnel Facilities
- Renew and repair ventilation equipment and emergency facilities in tunnels, which enable expressway users to safely evacuate in case of a tunnel disaster
- <Four-lane Project>



 In order to prevent the blockage of expressways caused by slope collapse in case of a disaster, construction work will be carried out to change provisional two-lane sections (one lane on each side) to four-lane sections (two lanes on each side,) contributing to maintaining redundancy of road functions.



## **Evaluation by JCR to the Framework**

## 1. Environmental Improvement effects of Projects (Green Bond)

Use of Proceeds: A project to improve the resilience of expressway infrastructure managed by NEXCO CENTRAL against natural disasters (typhoons, floods or storm surges) that have been exacerbated due to recent climate change.

The proceeds will be used for projects on climate change adaptation in the transportation infrastructure sector. The use of this proceeds falls under "Project for climate change adaptation" in "Green Bond Principles."

<Evaluation by JCR to the Use of Proceeds of Green Bonds in this framework>

This use of proceeds will be fully allocated to climate change adaptation projects in the transportation infrastructure sector, and it can be expected to have high environmental benefits. This use of proceeds is categorized into "Project for climate change adaptation" as for the Green Project Classification defined in "Green Bond Principles."

NEXCO CENTRAL selected the use of proceeds on green bonds in this eligible criteria as projects that can be positioned as adaptation measures, in particular, toward global warming and projects for porous asphalt pavements that are highly contribute to the resilience of infrastructure among the items listed to be addressed in the Infrastructure Life Extension Plan. NEXCO CENTRAL identified eligible adaptation project categories with the following steps: JCR has confirmed the eligibility as eligible projects with six steps required in the Climate Resilience Principles set forth by the Climate Bonds Initiative, an international initiative.

Step 1. Understanding of the Current Situation

JCR's Key Consideration in this Factor:

JCR will clearly define investment targets for climate risks and resilience. JCR will clarify the position of the target assets in other broader systems and their interdependence with other infrastructure.

JCR Evaluation:

NEXCO CENTRAL has sequentially developed expressways under its management since the opening of the MEISHIN EXPWY between Sekigahara and Yokaichi on April 12, 1964. Its total length of 2,007 km was in service as of March 8, 2015 when NEXCO CENTRAL Infrastructure Life Extension Plan was formulated by the Company. Approximately 1,203 km (roughly 60 percent of the total) have been in operation for over 30 years since the opening of the EXPWY. The heavy vehicle traffic has increased, the application amount of anti-freezing agents in snowy and cold regions has increased from the average spraying amount of 33t/km between January and April, 2001 to 53t/km between May and December, 2012, anomalous rainfall for a short-time has increasingly occurred (50 mm or more per hour) from the annual average of 168 between 1976 and 1986 to that of 226 between 1999 and 2010. Under such severe environmental conditions,



approximately 60 percent of bridges and 30 percent of tunnels have been in operation for more than 30 years, indicating that deterioration is becoming apparent along with the aging.

In response to the MLIT Action Plans for Life Extension of Infrastructure mapped out in June 2021, NEXCO CENTRAL also implemented the 2nd Infrastructure Life Extension Plan (Action Plan) in December 2021. The total expressway length has extended to 2,170km since 2015. Expressways play an important role as a key for emergency transportation in case of a disaster. It was indicated the importance of maintaining and managing safe and reliable road infrastructure in the MLIT's climate change adaptation plan.

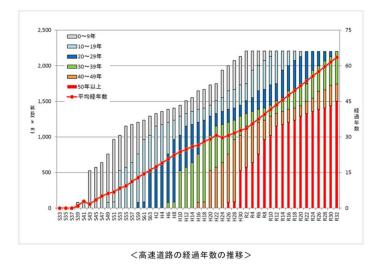


Figure 11: Elapsed Years of Expressways Managed by NEXCO CENTRAL (Japanese)<sup>6</sup>

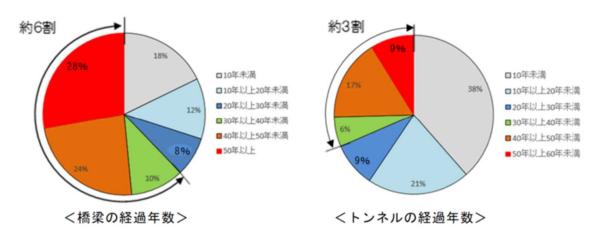


Figure 22: Elapsed Years of Bridges and Tunnels Managed by NEXCO CENTRAL (Japanese)<sup>7</sup>

NEXCO CENTRAL previously used the proceeds for the large-scale renewal projects (large-scale renewal/repair) for roads, bridges or tunnels managed in the Green Bond Framework, however, it will use the proceeds for repair projects with similar works in addition to large-scale renewal projects. The Company inspected bridges, tunnels and large structures from FY 2014 to FY 2008 and measures such

<sup>&</sup>lt;sup>6</sup> NEXCO CENTRAL Infrastructure Life Extension Plan (Action Plan)(Japanese) at https://www.c-nexco.co.jp/koushin/infrastructure/pdf/infrastructure\_2021.pdf

<sup>&</sup>lt;sup>7</sup> NEXCO CENTRAL Infrastructure Life Extension Plan (Action Plan) (Japanese) at https://www.c-nexco.co.jp/koushin/infrastructure/pdf/infrastructure\_2021.pdf



as repairs were taken for those that fall under Criteria Category III (early) out of those that fall under Criteria Category I (healthy) to IV (emergency); however, 9 percent of the Criteria Category I and II (preventive maintenance) were determined as Category III five years later. Based on the aforementioned, NEXCO CENTRAL plans to perform work such as scheduled repairs for the construction classified as Criteria Category III or repair work or large-scale renewal projects as preventive maintenance, including taking early measures or deterioration control measures when damages are still minor as for the construction classified as Criteria Category I and II.

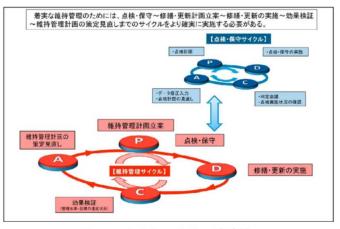


図-12 メンテナンスサイクルの概念図

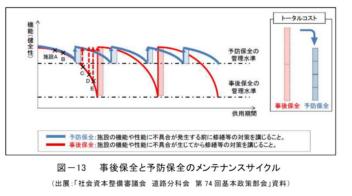


Figure 33: Maintenance Cycle of NEXCO CENTRAL (Japanese)<sup>8</sup>

Step 2. Verify Climate Risks

JCR's Key Consideration in this Factor:

Physical climate risks shall be uncovered.

Make an assessment based on the prediction with RCP4.5 and RCP8.5 for a top-down approach.

Make an assessment focused on vulnerabilities according to local circumstances, such as the hazard maps established in Japan for a bottom-up approach.

JCR Evaluation:

<sup>&</sup>lt;sup>8</sup> NEXCO CENTRAL Infrastructure Life Extension Plan (Action Plan) (Japanese) at https://www.c-nexco.co.jp/koushin/infrastructure/pdf/infrastructure\_2021.pdf





The domestic forecasts of climate change are regularly announced by Japan Meteorological Agency as forecasts of global warming and Global Warming Forecast Information Volume 9 published on March 2017 is the latest version. The forecasts were estimated based on the assumption of RCP8.5 in the Global Warming Forecast Information Volume 9, based on which each prefecture has increasingly created its own platform for climate change prediction to make forecasts and has formulated climate change adaptation plans in its basic environmental plans. The contents set as eligible projects by NEXCO CENTAL are ranged from Nagano Prefecture, Toyama Prefecture, Ishikawa Prefecture, Fukui Prefecture, Shiga Prefecture, Gifu Prefecture, Mie Prefecture, Shizuoka Prefecture, Yamanashi Prefecture to the Tokyo Metropolitan; therefore, climate risks have been verified by referring to forecasts on changes in temperature, precipitation, short-time rainfall, heavy rain frequency, snow fall and a maximum depth of snow cover by the Japan Meteorological Agency assuming RCP8.5 for those prefectures. Thus, the Company takes into account vulnerabilities in accordance with local actual circumstances, such as the climate trends in each region for the past 100 years or climate change adaptation plans established by each prefecture although changes in overall weather conditions are basically conceived via the top-down approach.

"Construction on bridges in large-scale renewal projects or repair projects" refers to repair work on bridges in areas with much snowfall. The application amount of antifreeze agents (sodium chloride) in winter has been on the increase year by year, and the amount sprayed tends to be particularly high on icy elevated areas. Therefore, in RC (reinforced concrete) floor slabs, salt damage has been increased with antifreeze agents and deterioration such as cracks under floor slabs occur due to the corrosion of reinforcing bars. The repair work is to extend the service life of the RC floor slabs by replacing them and to make the road surface more resistant to corrosion when spraying with antifreeze agents.

JCR has verified the risks identified by NEXCO CENTRAL with respect to the changes in temperature, snow cover and latest snow cover by referring to forecasts of global warming. According to this report, an analysis of the characteristics for the past 100 years shows that temperature has significantly changed in spring and autumn and the largest change in winter was an increase of 1.6 degrees Celsius in Toyama although changes in temperature have been on the rise in each prefecture from an increase of 1.2 degrees Celsius to that of 2.2 degrees Celsius. On one hand, it is difficult to compare snowfall amounts with those prior to 2005 since the measurement method was changed since then; however, no prefecture has shown any significant changes in snowfall amounts in and after 2005. Then, there is no significant trend that the deepest snowfall has been decreasing as same as snowfall. On the other hand, the heavy snowfall seen in 2014 and 2018 was influenced by the La Niña phenomenon by which westerly wind (subtropical jet stream) meandered with the intensity of cumulus convection near Indonesia, and cold air flowed more easily near Japan. The amounts of heavy snowfall reached unprecedented levels in many areas. Annual snow cover is expected to decrease in Japan as a whole while the deepest snow cover is projected to increase in some areas, such as Hokkaido, during severe winter for long-term forecasts by the end of the 21<sup>st</sup> Century. This is due to increases in water vapor in the atmosphere with the rising temperature and sea surface temperature caused by global warming, which increases snowfall in cold areas even in global warming and snowfall has been remained as snow





cover. Therefore, the snowfall amounts will not be changed in the future during severe winters in northern Japan. Some research papers indicated that the frequency of extreme snowfall, which occurs occasionally in Honshu and Hokkaido, will increase even with global warming. Consequently, it is unlikely that the use of antifreeze agents will decrease significantly, and it is important to carry out renew construction on bridges with sufficient resilience to the application of antifreeze agent or heavy snowfall in regions with torrential snow. Accordingly, JCR has evaluated that the climate risk verification for the projects covered by NEXCO CENTRAL is adequate.

Then, construction to earthwork structure (slopes) in large-scale renewal projects and repair projects is intended to prevent landslides by renovating the existing slopes since their strength has weakened. NEXCO CENTRAL is designed to avoid disasters from the collapse of slopes with increases in anomalous rainfall for a short time, caused by climate change and a rise in water levels in slopes by reinforcing anchors on slopes or renovating drainage channels. The construction of porous asphalt pavements in expressways aims to reduce risks of accidents caused by short-term heavy rain by constructing drainage pavements.

Short-term heavy rain refers to rainfall of 30 mm or more and 50 mm or more per hour. According to forecasts of global warming under the RCP8.5 scenario, the occurrence of (1) rain buckets (short-term heavy rain with an hourly precipitation of 30 mm or more) and (2) waterfall-like rain (an hourly precipitation of 50 mm or more) will increase significantly in almost all regions and seasons in Japan. Of these, it is forecasted that 50-year probability daily precipitation will increase nationwide although the annual maximum daily precipitation (the heaviest daily precipitation in a year) related to is largely uncertain, and it may change depending upon tropical cyclones. The 100-year probability daily precipitation will increase by 10 to 60 percent by the end of the 21st Century.

Accordingly, JCR has evaluated that "construction to earthwork structure (slopes) in large-scale renewal projects and repair projects" to enforce the existing earthwork structures so as to support the pressure of slopes with a large amount of water and "construction of porous asphalt pavements in expressways" are projects to reduce damage caused by increased rainfall due to climate change, and risks are appropriately assumed.

#### **Step 3. Reduce Climate Risks**

#### JCR's Key Consideration in this Factor:

JCR will demonstrate that the climate risks identified is avoidable in a purposeful manner and at a level that can address the climate change assumed during the service life of the target assets and will clarify whether there are any items that have significant negative impacts on the resilience of other environments with the assets in question.

There may be a variety of future risk scenarios, considering the uncertainty of the future,

JCR Evaluation:



NEXCO CENTRAL has identified and clarified specific construction details per project as avoidance /mitigation effects of climate risks. The Company has also disclosed measures exclusively for eligible projects for which green bond proceeds will be used. JCR has evaluated that these construction details will help reduce damage caused by climate risks. JCR also has evaluated that eligible projects for green bonds are exclusively limited to the existing road improvements or porous asphalt construction for roads, which are construction without significant negative impacts on the environment such as large-scale land reclamation and that the construction will enforce the expressway infrastructure and extend the service life, thereby reducing disaster risks, which are becoming more severe due to climate change.

#### Step 4. Verify Benefits of Resilience against Climate Change

JCR's Key Consideration in this Factor:

JCR will verify the resilience of assets against climate change with an emphasis on the target systems.

JCR Evaluation:

The following resilience to expressways is expected to be achieved as indicated in this framework. Technical standards have been discussed and criteria were established, reflecting the results of the examinations in the "recommendations of expressway technical review committee on long-term maintenance and renewal of expressway assets" and "technical standards for pavement structure."

"Construction to bridges in large-scale renewal projects and repair projects"

Prevention of floor slabs deterioration due to penetration of water and chloride from road surfaces

Previous research has shown that the fatigue life of RC floor slabs due to wheel loads between dry and wet conditions is roughly 100 times different. Therefore, waterproofing is applied to RC floor slabs to extend their service life; however, RC slabs that have already deteriorated may not improve their durability even if waterproofing is newly applied. As a result, the durability can be improved, the health of bridges can be restored and the initial construction performance can be provided by replacing RC floor slabs with PC floor slabs.

"Construction on earthwork structures (slopes) in large-scale renewal projects and repair projects"

For cut slopes, the Company will replace ground anchors with low anticorrosive with ones with high anticorrosive.

NEXCO CENTRAL will replace the small section of drainage ditch (inner width 180mm or 240mm) installed based on design guidelines prior to 1980 with one of 300mm inner width, which are aligned with the current standard. The drainage cross section will be enlarged and the wastewater treatment capacity will improve. It is expected that drainage capacity will increase by roughly 2 to 4 times based on trial calculations.

"Construction to earthwork structure (slopes) in expressways"



The porous asphalt pavements are to have approximately 20 percent porosity. The porosity is 8mm for the surface with 4cm thickness based on a simple calculation (40mm×20 percent=8mm.) This means that rainwater can be stored and passed through to a rainfall intensity of 8mm/h. The 20 percent porosity has been determined from the perspective of functionalities (water permeability) and durability based on past results.

JCR has evaluated that the aforementioned climate change adaptation projects for expressway assets are appropriate measures, taking into consideration the balance between the current technology and other technical characteristics and that these projects are categorized into the project for infrastructure development, which enforces the resilience of the existing infrastructure, responds to climate change expected and incorporates new technologies.

#### Step 5. Trade-off with Climate Mitigation

JCR's Key Consideration in this Factor:

The call for climate change mitigation may be reduced with the advantages by climate change resilience, which can significantly exceed the relevant emissions or contribute to avoiding GHG emissions in case of a disaster in assets/activities that are intended to be resilient on climate change. At present, there is no consensus as to under which circumstances a trade-off with climate mitigation is conceivable. In any case, however, investments in technologies such as lock-in to fossil fuels shall be avoided.

JCR Evaluation:

JCR has evaluated that this project does not include locked-in to fossil fuels since it is renewal/ renovation of the existing aging core infrastructure and introduction of new technologies that are highly adaptable to climate change in the core infrastructure, and therefore, no trade-off relationship is assumed with projects aimed at climate change mitigation.

#### Step 6. Monitoring and Evaluation

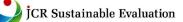
JCR's Key Consideration in this Factor:

Constant monitoring and periodic evaluation are required to ensure that the resiliency to climate change is sufficiently maintained.

#### JCR Evaluation:

NEXCO CENTRAL has conducted (1) initial inspections to figure out initial situations of structures after completion and (2) periodic inspections to evaluate/assess structures or to monitor if there are any deformed structures in order to prevent damage to third parties. The frequency and methods are determined based on each purpose.

Accordingly, JCR has evaluated that NEXCO CENTRAL has targeted projects with eligibility as Climate change adaptation projects.



## 2. Social Benefits of Projects (Social Bonds)

Use of Proceeds 1: Project that will bring about benefits to expressway users in case of a disaster

The proceeds will be used for (1) repair projects that weaken the power of disasters and minimize damage (bridges, slopes, snow and ice protection facilities, earthquake disaster measures,) protect users through prompt information transmission to prevent secondary disasters, (2) repair projects to protect users through prompt information transmission and prevent secondary disasters (electrical, communicational or architectural facilities) and (3) repair projects to safely evacuate users involved in disasters (tunnel disaster prevention and tunnel facilities.) This use of proceeds is categorized into "Affordable basic infrastructure" for people involved in disasters in "Social Bond Principles."

The social bond proceeds will be used for projects that will benefit expressway users in case of a disaster in NEXCO CENTRAL. The Company will use the proceeds for the following three type of projects with the social bonds in this framework.

- (1) Repair projects to weaken the power of disasters and minimize damage (bridges, slopes, snow and ice protection facilities, earthquake disaster measures)
- (2) Repair projects to protect users through prompt information transmission and prevent secondary disasters (electrical, communicational, architectural facilities)
- (3) Repair projects to safely evacuate users involved in disasters (tunnel disaster prevention, tunnel facilities)

The use of proceeds in (1) is projects that are not for climate change adaptation but to localize damage caused by natural disasters. These projects are targeted at people involved in disasters while using expressways. In bridge repair projects, the target is to replace bridge bearings, which is a component between a bridge girder and a pier and to minimize damage in case of an earthquake disaster. Along with measures against deterioration of floor slabs, which is the use of proceeds for climate change adaptation, efforts are made to replace existing bridge bearings with newer and higher-performance ones so as to minimize damage to bridges in cases of an earthquake.

The slope repair projects is targeted at installation of guard fences. The purpose of installing guard fences is to prevent rocks from falling and debris from inflowing from slopes and to minimize damage in case of an earthquake or rainfall disaster.

The repair projects for snow and ice protection facilities cover the installation and repair of snow and ice protection facilities such as snow melting equipment. There are many areas that have been designated as heavy snowfall areas, stipulated under the Act on Special Measures concerning Countermeasures for Heavy-snowfall Areas in the NEXCO CENTRAL jurisdiction mainly in the Hokuriku region. As countermeasures against snow and ice in winter, the Company has deployed not only snow removal or snow melting vehicles but also installed stationary snow melting equipment in areas where it is difficult to climb steep slopes due to snowfall and it strives to minimize snow and ice disasters by spraying liquid solution from the equipment.



Repair projects for earthquake disaster prevention cover seismic reinforcement work, such as pier reinforcement or installation of bridge collapse prevention devices to strengthen the resistance of bridges. In order to strengthen the resistance of bridges, NEXCO CENTRAL has carried out repair projects to make the bridges meet the "seismic performance 2" of the Seismic Performance specified in the Specifications for Expressway Bridges, a technical standard set by the MLIT. The seismic performance 2 refers to "the performance to ensure that damage caused by earthquakes is limited and that the bridge's functions can be quickly restored.<sup>9</sup>"

The use of proceeds in (2) above is intended to prevent secondary disasters by transmitting information to users in case of a disaster. The green bond proceeds or the proceeds described in (1) above will be used to make efforts to prevent or minimize disasters; however, if a disaster occurs, the project will prevent secondary disasters by promptly informing expressway users of the disaster. Regarding (2,) this project is targeted at people who encounter disasters when using expressways in the same way as in (1.)

Repair projects on electrical facilities include the renewal and repair of each equipment such as road information boards to promptly transmit information to expressway users in case of a disaster, and the renewal and repair of power receiving and distribution facilities or private power generation facilities to supply electricity to each equipment including road information boards. These road information boards are dotted along expressways and power receiving and distribution equipment and private power generation equipment are placed in each interchange or service/parking areas. These repairs are intended to ensure a system that can properly provide expressway users with information in the event of a power outage caused by disasters.

Repair projects on communication facilities include the renewal and repair of transmission equipment for communication with respective facilities such as road information boards or monitoring control equipment in road control centers. The projects cover devices that communicate with road information boards in the service area of NEXCO CENTRAL and the monitoring control equipment in road control centers in four locations (Nagoya, Kanazawa, Kawasaki and Hachioji) in its service areas. In case of a disaster, information will be transmitted to road information boards and alerting expressway users via these facilities or equipment.

Repair projects on construction facilities cover new construction and renovation of management facilities that will serve as disaster prevention bases in case of a disaster. NEXCO CENTRAL plans to utilize its regional offices as comprehensive disaster prevention bases in case of a disaster and plans to reconstruct these facilities to improve their disaster prevention functions. The Company plans to establish a system that will allow operations to continue in the event of a disaster, and to transmit information to users or respond to evacuations by renovating the administrative facilities that will serve as disaster prevention hubs.

The use of proceeds in (3) is targeted at countermeasures against disasters in tunnels. The proceeds cover users of expressway tunnels in case of a disaster.

<sup>&</sup>lt;sup>9</sup> NEXCO CENTRAL's website at https://www.cnexco.co.jp/images/important\_news/993/cba7b3e9afb28de8ceb3a0a5ba879547.pdf



Repair projects on tunnel disaster prevention include the installation of evacuation tunnels and of ventilation facilities in tunnels and the enhancement of emergency facilities to safely evacuate expressway users in case of a tunnel disaster. There are 441 tunnels in NEXCO CENTRAL service areas, and in 2019, the MLIT revised the "Standard for Installation of Emergency Facilities in Road Tunnels<sup>10</sup>," in which respective distances standardized for installation of evacuation tunnels were different depending upon the traffic system; however, these were unified into a standard with a shorter distance for installation. NEXCO CENTRAL, in accordance with the revised installation standards, has been developing ventilation facilities in tunnels with extended distances and heavy traffic volume, which will also function as smoke evacuation facilities in the event of a disaster. Emergency facilities are also planned to be reinforced in line with the revised standards.

Repair projects on tunnel facilities will cover the renewal and repair of the existing ventilation and emergency equipment in existing tunnels, which will provide expressway tunnel users with safer infrastructure in case of a disaster.

Accordingly, JCR has evaluated that the use of the proceeds is socially beneficial, as all of the aforementioned items from (i) through (iii) fall under "Affordable basic infrastructure facilities" for people involved in a disaster.

Use of Proceeds 2: Projects that will benefit local residents by preventing the blockage of expressways in case of a disaster and enabling prompt road restoration.

The use of proceeds 2 is to increase the current two temporary lanes to four lanes in expressways. The proceeds will be used only for projects that reduce the risks of road closure by increasing the lanes to four and is expected to have social benefits of encouraging the early resumption of traffic in areas isolated due to disasters by improving the resilience of expressways. This use of proceeds is categorized into "Affordable basic infrastructure facilities" for residents of disasteraffected areas in "Social Bond Principles."

Of the high-standard arterial roads in Japan, approximately 40 percent have three or fewer lanes, which is extremely high compared to those of other countries. In particular, temporary two lanes are often adopted on roads where traffic volume is unlikely to be very high when the road was initially opened for service; however, the median strip is partitioned with rubber poles in many cases, and in such places, the accident rate is higher than that of four-lane sections. It has also been pointed out that in case of a disaster, such as an earthquake or heavy rain, (1) some roads to all traffic need to be shut for restoration work and (2) some roads will be narrower and required to close to remove snow from the shoulders during heavy snowfall, which will cause significant traffic disruptions. The National Arterial Road Meeting of the MLIT has announced the "basic policy (vision) for wide area road networks," which promotes multi-lane roads or secures alternatives that do not result in disruption of routes access to disaster prevention bases such as

https://www.mlit.go.jp/road/sign/kijyun/pdf/tonnneruhijou.pdf (Japanese)



<sup>&</sup>lt;sup>10</sup>Revision of standards for road tunnel emergency facility installation at

medical institutions from the perspective of alternative functions in case of a disaster in the Chubu and Hokuriku Blocks where NEXCO CENTRAL is located as one of the policies.<sup>11</sup>

The expressways managed and owned by NEXCO CENTRAL are categorized into high-standard roads in the wide-area road network. The MLIT has selected 880 km of high-standard roads (toll roads) as priority sections for four-lane construction (of which the NEXCO CENTRAL section is approximately 100 km) so as to enforce the national resilience and it has started to work on these sections in sequence.

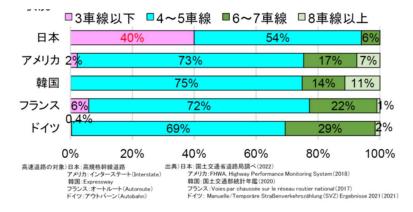


Figure Four-lane Ranges in Each Country's Expressway Network (Japanese)<sup>12</sup>

It is expected to reduce traffic disruptions in regions caused by street closures during the abovementioned disasters by changing the temporary two-lane to four-lane. NEXCO CENTRAL announced that the road closures has decreased due to disasters in sections where the provisional two lanes were changed to four lanes.<sup>13</sup>

Those sections that simply need to be widened to four lanes due to increased traffic volume are not included in this use of proceeds but only those that will contribute to the early resumption of traffic in areas isolated due to disasters by improving the resilience of expressways are covered as the use of proceeds.

Accordingly, JCR has evaluated that this use of proceeds is social since it falls under "Affordable basic infrastructure facilities" for residents in the disaster-affected areas.

3. Negative Impacts on the Environment and Society

This Framework for Negative Impacts on the Environment and Society

Negative impacts of projects on the environment and society and how to address them

- 1. Risks Assumed
- · Negative risks to the environment and regions:
- (1) Impacts of land development on the ecosystem

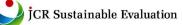
<sup>&</sup>lt;sup>13</sup> NEXCO CENTRAL's website at https://www.c-nexco.co.jp/images/news/4767/2e2a4b3e16a16283802ce291d72abf2f.pdf



 <sup>&</sup>lt;sup>11</sup> The 53<sup>rd</sup> National Arterial Road Meeting of the MLIT at https://www.mlit.go.jp/policy/shingikai/road01\_sg\_000622.html
 <sup>12</sup> Handout 5 of the 53<sup>rd</sup> National arterial road meeting by Ministry of Land, Infrastructure, Transport and Tourism at https://www.mlit.go.jp/policy/shingikai/content/001587621.pdf



- (2) Occurrence of traffic congestion caused by traffic regulations and lane restrictions
- (3) Safety risks for construction workers
- 2. Responses to Risk Mitigation
- (1) Impacts of land development on the ecosystem
- Conduct environmental impact assessments in all expressway construction projects (by the national government or target prefectures)
- Perform environmental research, such as soil or hydrological surveys for construction and determine road structures so as not to affect living of local communities after figuring out the topography, geology or groundwater conditions
- In areas with rich natural environments, collect seeds from trees that have been grown naturally in local areas, cultivate and utilize them as "local seedlings" for greening expressway surfaces or other areas.
- Recycle and reuse construction by-products, such as construction generated soil, asphalt or concrete lumps, and use those, which cannot be reused or recycled, as recycled resources as much as possible
- Take measures against noise or air pollution in accordance with the gist of the Basic Environmental Law and the Noise Regulation Law
- \* Noise measures: Establish noise barrier walls or environment facility zones based on noise forecasts before construction and measurement results after construction, requests from local governments in areas along roads and locational conditions Air Pollution Countermeasures: growing trees on slopes or measures against traffic congestion
- (2) Traffic congestion caused by traffic or lane regulations
- In case of large-scale lane regulations, disseminate the regulations to users via its website or public relations in advance to alleviate traffic congestion.
- Reduce traffic influence due to construction by implementing work on only one side of the road according to the two-way traffic regulation.
- (3) Safety risk of construction workers
- The Company's management philosophy is to prioritize on safety, and it has determined "five initiative policies" for improving safety as a concrete initiative policy for "continuous efforts to improve safety," one of its management policies.
- 1. Foster a corporate culture that gives first priority to safety
- 2. Promote safety activities



- 3. Develop human resources that support safety
- 4. Continuously improve operational processes in response to aging deterioration or potential risks in road structures
- 5. Promote steady and efficient projects to improve safety
- Implement initiatives for safe and efficient construction or work with the contractors and Group companies based on the above.
- Annually report the implementation of initiatives based on the "five initiative policies" at the Safety Improvement Expert Meeting composed of external experts.

## **Evaluation by JCR to the Framework**

NEXCO CENTRAL has stated that it has no risk of major negative impacts on the environment or society since most of the eligible projects in this framework only cover renovation work of the existing expressways or pavement work for roads and do not include large-scale civil engineering work. The four-lane construction covers sections that have already been opened with provisional two lanes, and most of these roads are currently under land acquisition or construction in preparation for increasing lanes to four in the future. However, some earthwork structures such as tunnels will require large-scale construction while no excavation will be carried out since these will not be used for the provisional two-lane roads, and these construction will be performed in conjunction with four-lane construction. NEXCO CENTRAL has stipulated to confirm negative impacts on the environment and the Company or to take reduction measures by carrying out procedures stipulated by laws or regulations such as environmental impact assessments for the aforementioned construction. The anticipated risks and mitigation measures described above have been established for all projects in NEXCO CENTRAL including those listed above. JCR has confirmed that a system has been in place to take appropriate countermeasures by conducting interviews with NEXCO CENTRAL and confirming related materials.

#### 4. Alignment with SDGs

#### (1) Alignment with ICMA's SDGs mapping

JCR has evaluated that the projects eligible for the use of proceeds have contributed to the following SDG goals and targets in light of ICMA's SDG mapping.

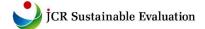


#### Goal 3: Ensure healthy lives and promote well-being for all at all ages

Target 3.6. By 2020, halve the number of global deaths and injuries from road traffic accidents



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



Target 9.1. Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans border infrastructure, to support economic development and human well-being with a focus on affordable and equitable access for all



#### Goal 13: Take urgent action to combat climate change and its impacts

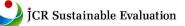
Target 13.1. Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries



## (2) Alignment with SDGs Action Plan and Social Bond Guidelines

JCR has confirmed that the projects eligible for the use of proceeds are aligned with the following items of the "Social issues based on SDGs action plans" as exemplified in the Social Bond Guidelines by the Financial Services Agency.

Social issues based on SDGs action plans: Sustainable national resilience						
Target Populations: Expressway expressways in ca	Target					
Projects for constructing facilities with disaster prevention and mitigation measures and projects for countermeasures against disaster vulnerability/aging infrastructure	Affordable basic infrastructure facilities	3 GOODHAUTH AND WELLBEING 9 MEURACITIKETIKE 9 MEURACITIKETIKE				



## Evaluation Phase 2: Management, Operation and Transparency Evaluation

## m1(F)

## I. Selection Criteria and Processes of Use of Proceeds

## JCR's Key Consideration in this Factor

In this section, JCR will confirm whether the targets to be achieved through this evaluation, the selection criteria for eligible projects, the validity of the process and a series of processes have been appropriately disclosed to investors.

## ►►► Current Status of Evaluation Target and JCR Evaluation

JCR has determined that departments with specialized knowledge and the management are appropriately involved in the goals, the selection criteria for eligible projects and processes in this framework and that transparency is ensured.

## 1. Goals

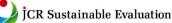
#### **This Framework for Goals**

#### Investment Policy based on Long-term Vision

NEXCO CENTRAL has managed roughly 2,100km of expressways, including TOMEI EXPWY, MEISHIN EXPWY and CHUO EXPWY. TOMEI EXPWY and MEISHIN EXPWY have been aging, with 50 years or more from the opening of all routes, and approximately 60 percent of all routes have been in service for 30 years or more and roughly 30 percent of all routes have been in service for 50 years or more. In order to continue to fulfill its role as significant routes that support people's living or the economy, the Company is required to early work on large-scale renewal and repair projects.

In recent years, the social environment has been changing rapidly, with frequent and severe natural disasters, a falling birthrate, an increase in aging population, a rapid decline in working population and rapid technological innovation in the ICT sector. As a business concern, how to contribute to developing a sustainable society has been tested. The Group has been continuing to take on the challenge, aiming higher by working to solve social issues such as improving expressway networks, taking measures against aging through renewal projects, taking resilience measures through anti-seismic reinforcement on brides, developing technology with ICT or resolving social issues such as regional revitalization.

The Japanese government approved the Climate Change Adaptation Bill in February 2018 and promulgated it in June. It has been stipulated that the national government should formulate a climate change adaptation plan to promote the adaptation to climate change in various sectors such as disaster risk reduction under the law.



In November 2018, the MLIT in charge of road administration, formulated the "MLIT Climate Change Adaptation Plan" based on the aforementioned law under which "developing highly safe and reliable road networks" was specified.

Taking drastic measures to address aging expressway structures, such as bridges, tunnels and earth structures through projects targeted at the use of green bond proceeds under this framework is in line with the government's climate change adaptation plan policy of the aforementioned "developing highly safe and reliable road networks."

In December 2013, the government promulgated the "basic act for national resilience contributing to preventing and mitigating disasters to achieve strong and flexible people's living," based on which it formulated the "basic act for national resilience" or "five-year acceleration measures for disaster prevention and mitigation and national resilience" to promote the development of a disaster-resistant nation. Of these, the national government is required to ensure functionalities of national arterial roads and take measures against aging including proper reinforcement for traffic infrastructure.

The "MLIT Action Plans for Life Extension of Infrastructure FY 2021-FY 2027" formulated by the MLIT in September 2019 clearly states that it is increasingly important to adequately maintain infrastructure during normal times in order for the infrastructure developed to exert significant effects as disaster prevention and to realize sustainable infrastructure maintenance so that the infrastructure functions can be appropriately exercised in the future.

Promoting disaster prevention and aging measures for expressways by implementing target projects for which proceeds through social bond proceeds will be used in this framework is in line with the government's policy on disaster prevention/mitigation and national resilience and contribute to the development of high-quality infrastructure with sustainable and national resilience.

Regarding the use of proceeds from green bonds and social bonds, JCR has confirmed that NEXCO CENTAL has taken various measures in accordance with the followings: (1) "Recommendations of expressway technical review committee on long-term maintenance and renewal of expressway assets (January 22, 2014)" stipulated by the Company to be resilient for the MLIT climate change adaptation plan and for aging expressways, (2) "Large-scale renewal/repair of expressways managed by NEXCO EAST, NEXCO CENTRAL and NEXCO WEST (January 22, 2014)," (3) "the MLIT action plans for life extension of infrastructure FY 2021-FY 2027 (June 18, 2021)," (4) "NEXCO CENTRAL infrastructure life extension plan (action plan) FY 2021-FY 2025 (December, 2021)," (5) "NEXCO CENTRAL Individual facility Plans (Road Facilities) (December 2020)," (6) "Guidelines for maintenance inspection" (April 2020)," (7) "Guidelines for facility maintenance management (April 2020)," (8) "Basic plan for expressway safety and security (September 10, 2019)," (9) "Implementation plan for expressway safety and security (December 20, 2019)," (10) "Agreement on the National Expressway Central Automobile Route Fuji-Yoshida Line," (11) "Technical standards for pavement structure" (No. 48, No. 55, June 29, 2001) and (12) Design procedures for NEXCO CENTRAL. Accordingly, JCR has evaluated that the projects covered by this framework are



aligned with the transportation infrastructure plans formulated by the MLIT and the strategy of NEXCO CENTRAL.

## 2. Selection Criteria

JCR has evaluated that the eligibility criteria in this framework have covered projects with high environmental or social benefits as confirmed in Evaluation Phase 1.

#### 3. Processes

The Framework for Processes

#### **Selection Processes for Eligible Project**

1. Project Selection Participants

OMLIT (Minister of Land, Infrastructure, Transport and Tourism)

- For the expressway projects to be carried out by the Company (constructing or renovating expressways to collecting tolls,) it applied for business permission to the Minister of Land, Infrastructure, Transport and Tourism based on the Article 3 of the act on special measures concerning road construction and improvement and the approval was given.
- Business plans are annually submitted to the MLIT and approval is given based on the Article 10 of the act on expressway companies.

 $\bigcirc$  Japan Expressway Holding and Debt Repayment Agency (hereinafter referred to as "the Agency")

- The Company concluded an agreement that stipulates the projects' budgets (debt assumption limit) or fees on lending prior to the implementation of the NEXCO CENTRAL expressway projects.
- 2. Project Selection Processes

<Large-scale renewal projects>

- (1) Large-scale renewal plans and large-scale repair plans were formulated based on the recommendations of the expressway technical review committee on long-term maintenance and renewal of expressway assets, which was established with external experts (January 2014.)
- (2) Reflect the additions to large-scale renewal projects in the agreement concluded with the Agency in accordance with the enforcement of the Act to partially revise the Road Act (March 2015)
- (3) Formulate a renewal plan (outline) based on "Interim Summary" of the "expressway technical review committee on long-term maintenance and renewal of expressway assets" (January 2020)

- (4) Select the site to be constructed per year based on past disaster/repair records or inspection results based on the aforementioned (1) and (3)
- (5) Select construction with large demand for proceeds as the target projects by Finance Division from the sites in Step (4)

<Porous asphalt pavements>

- (1) Formulate a basic plan as "routes that need construction" among "motorways to be constructed by the national government" stipulated in the National Development Arterial Expressway Construction Law by the Minister of Land, Infrastructure, Transport and Tourism
- (2) Map out a maintenance plan based on the basic plan in accordance with the provisions of the National Expressway Law and start operations with a business license received by the Company from the MLIT.
- (3) Select the construction projects with large demand for proceeds as target projects from(2) by Finance Division

<Repair Project>

- (1) Conduct various inspections and surveys and map out repair and reinforcement plans
- (2) Carry out repair and reinforcement projects based on the plan in (1)
- (3) Select the construction projects with large demand for proceeds as target projects from(2) by Finance Division

<Four-lane>

- (1) Formulate the "basic plan for safety and security on expressways" by the MLIT in response to the "basic policy 'Initiatives to improve the safety, reliability and usability of expressways'" complied in the Committee on National Arterial Road, Road Subcommittee, Social Capital Development Council (September 2019)
- (2) Formulate the "implementation plan for safety and security on expressways" based on (1) by the Company (December 2019)
- (3) Carry out construction on the provisional two-lane sections that have been identified as sections with major issues and have been operated based on the plans in (1) and (2.)
- (4) Select construction that contributes to maintaining redundancy in case of a disaster as a target project from (3) by Finance Division.

#### **Evaluation by JCR to the Framework**

Parties involved in the selection and its processes for NEXCO CENTRAL projects have been in accordance with the law, and the selection processes have been highly transparent, with the involvement of third parties as well as NEXCO CENTRAL.





Accordingly, JCR has evaluated that the goals, selection criteria and processes of NEXCO CENTRAL set out in this framework are appropriately established. The Company will use the shelf registration supplemental prospectus, Final Terms or Offering Circular as main documents when it issued green /social bonds upon issuance of the green/social bonds based on this framework and that transparency is ensured since it will disclose these criteria and processes to investors.

## **II. Management of Proceeds**

### JCR's Key Consideration in this Factor

It is generally assumed that how to manage proceeds widely varies depending upon the fundraiser. In this section, JCR will confirm that proceeds financed based on this evaluation target will be reliably allocated to eligible projects and that mechanisms and internal systems are in place to easily track and manage the allocation.

JCR also will give importance to whether the proceeds financed based on this evaluation target are scheduled to be early allocated to respective eligible projects and to the evaluation of management/operation methods for unallocated proceeds.

## **Description** Current Status of Evaluation Target and JCR Evaluation

JCR has evaluated the proceeds management system of NEXCO CENTRAL as highly transparent since the system has been appropriately established and has been disclosed in this evaluation report.

#### The Framework for Management of Proceeds

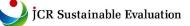
#### <How to Link Proceeds and Assets>

- The proceeds financed through green bonds and social bonds will be managed in their exclusive accounts, respectively after carefully aggregating the amount spent on projects (temporarily paid out from the Company's general account) and the total amount used for projects will be transferred from the exclusive accounts to the general accounts.
- The proceeds will be allocated for approximately two years on or after the date financed.

#### <Method of Tracking and Managing Proceeds Financed>

- The proceeds financed through green bonds and social bonds will be deposited into their respective exclusive bank accounts. After the proceeds are credited, the internal system will manage the total amount of proceeds financed and the cumulative amount of construction costs (temporarily disbursed from the general account) for the target project. NEXCO CENTRAL will examine the cumulative amount of expenditures and will transfer the proceeds from the exclusive account to the general account once every six months.
- Of the aforementioned, the proceeds, which are crediting to exclusive accounts and transferring from exclusive accounts to general accounts will be managed by Finance Division, and the Division will store deposit and withdrawal slips as evidence and will register them in the Company's accounting system. Accounting Division will manage and examine the cumulative amount of construction costs spent on the target projects and will extract the semi-annual value of construction put in place of the target projects from the asset system to figure out the progress.

**JCR Sustainable Evaluation** 



#### <Internal Control and External Audit regarding Tracking Management>

- Finance Division Manager, a chief casher, will manage deposits and withdrawals to and from accounts.
- The account balance at the end of the fiscal year is stated in documents related to the Company's balance sheet; therefore, an audit firm will confirm the balance sheet when semi-annually settling accounts.

#### <How to Track Unallocated Proceeds>

- NEXCO CENTRAL will disclose that the proceeds financed will be managed in cash or cash equivalents until it determines to allocate the proceeds to investors on its website.

#### **Evaluation by JCR to the Framework**

The use of proceeds through green bonds/social bonds specified in this framework is to invest only in green eligible projects or social eligible projects as defined in this framework, and the Company will not use the proceeds for other purposes.

NEXCO CENTRAL has clearly distinguished the use of green bonds/social bonds from other uses of proceeds by managing the proceeds financed in its exclusive accounts. After crediting proceeds to the exclusive accounts, the proceeds should be transferred to general accounts after examining the amount of accumulated expenditures such as construction costs per target project and the value of construction put in place of the target project should be half-yearly extracted from the asset system to figure out the progress, which has shown that the Company has a strict tracking management system is in place. The internal control system has been appropriately established for proceeds financed since Finance Division Manager, a chief casher, will manage deposits and withdrawals to and from accounts, and the audit firm will semi-annually confirm the settlement of accounts.

Accordingly, JCR has evaluated that NEXCO CENTRAL has established a strict financial management system and internal control system.



## **III. Reporting**

#### JCR's Key Consideration in this Factor

In this section, JCR will evaluate whether the disclosure system to investors before and after financing based on this evaluation target is planned in a detailed and effective manner.

## **L** Current Status of Evaluation Target and JCR Evaluation

JCR has evaluated that NEXCO CENTRAL will appropriately disclose the proceeds allocation, environmental benefits and social benefits to investors in terms of its reporting.

#### This Framework for Reporting

#### 4. Reporting

#### <How to Disclose Allocation of Proceeds>

- The proceeds financed will be allocated after receiving the proceeds according to the target project plan stated on the Company's website.
- NEXCO CENTRL will annually disclose the total amount of proceeds financed in cases where re-allocating proceeds is required due to the cancellation of a target project until the entire amount of proceeds financed is allocated to other target projects.
- The proceeds allocation will be annually disclosed on the Company's website.
- JCR will provide NEXCO CENTRAL with its evaluation review mainly reporting, including the allocation of proceeds, environmental benefits or details to be disclosed as benefits that will be provided to beneficial people where appropriate so long as the bonds are outstanding.

#### <Disclosure Method and Frequency of Impact Reporting>

#### <Green Bond>

The Company will annually disclose impact reporting on its website.

- The contents determined by NEXCO CENTRAL as environmental benefits
- JCR will provide NEXCO CENTRAL with its evaluation review of green bonds mainly reporting, such as the allocation of proceeds and environmental benefits where appropriate so long as green bonds are outstanding.

#### <Social Bond>

The Company will annually disclose impact reporting on its website.

- Contents determined by the Company as benefits to be provided to beneficiaries





- JCR will provide NEXCO CENTRAL with its evaluation review of green bonds mainly reporting, such as the allocation of proceeds and the details to be disclosed as benefits that will be provided to beneficiaries where appropriate so long as green bonds are outstanding.

#### <KPI in Impact Reporting>

<Green Bond>

NEXCO CENTRAL will disclose the following impact reporting as environmental benefits per target project.

#### **Output Indicator**

- The overview of the target large-scale renewal projects and repair projects
- Extended kilometers for large-scale renewal projects and repair projects
- Extended kilometers in which porous asphalt pavements projects were conducted

#### **Outcome Indicator**

<Large-scale renewal projects and repair projects>

Bridge:

The health of bridges will be restored with construction such as replacing floor slabs, and they will eventually have its initial performance.

Earthwork structures:

A drainage capacity can be improved by approximately 2 to 4 times through construction such as replacing drainage channels.

Reconstruction of ground anchors on cut slopes will restore their health to extend their service lives.

<Porous asphalt pavements>

A penetration water amount per hour (8 mm/h immediately after construction)

#### Impact

To maintain a safe and reliable transportation network by strengthening the resilience of transportation infrastructure against natural disasters (storm and flood disasters) resulting from climate change that have negative impacts on transportation infrastructure as assumed in the MLIT's Environmental Adaptation Plan.

#### <Social Bond>



NEXCO CENTRL will disclose the following impact reporting as benefits to the beneficiaries.

#### **Output Indicator**

<Repair Project>

- The overview of the target repair project
- <Four-lane project>
- The overview of the target four-lane project

#### **Outcome Indicator**

<Repair Project>

The following benefits will be brought about to expressway users in case of a disaster:

- Weaken the power of disasters and minimize the damage
- Protect users by promptly transmitting information to prevent secondary disasters
- Safely evaluate expressway users caught up in disasters
- <Quantitative indicators showing the number of beneficiaries>
- The number of expressway users (the number of vehicles used) on routes where repair projects were carried out
- <Four-lane Project>

This project will benefit neighboring residents by preventing expressway blockages in case of a disaster and enable speedy road restoration.

<Quantitative indicators showing the number of beneficiaries>

- The number of residents in the area around the routes where four-lane projects have been implemented

- The details of the implementation (sections or periods) in cases where any toll-free expressway is implemented and functioned as alternative roads to general roads in sections where four-lane project were carried out.

#### Impact

The Company aims to strengthen the resilience of transportation infrastructure and bring about benefits to expressway users and its neighboring residents by implementing disaster or aging measures in accordance with the basic plan for national resilience and the MLIT Action Plans for Life Extension of Infrastructure.



## Evaluation by JCR to the Framework

#### **Reporting on Allocation of Proceeds**

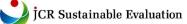
The use of proceeds financed through green bonds/social bonds by NEXCO CENTRAL will be disclosed to investors on its website or JCR's evaluation report. How to disclose allocation or how to manage unappropriated proceeds will be adequately disclosed. In cases where reappropriation is required due to a cancellation of a project for which proceeds will be allocated until they are repaid, the total amount of proceeds financed will be annually disclosed on the Company's website until the full amount of proceeds financed is allocated to other target projects.

#### **Reporting on Environmental Benefits and Social Benefits**

NEXCO CENTRAL will annually disclose the contents stipulated in this framework as reporting on environmental benefits of eligible green projects and reporting on social benefits of eligible social projects on its website.

Reporting on environmental benefits will include quantitative details in addition to the overview of the target construction, and appropriate targets for disclosure have been identified. Reporting on social benefits shows outputs and outcomes, and the contents described in the goals as impact are applicable and it is sufficient to demonstrate the social significance of the target projects since quantitative details will also be disclosed to the extent practicable.

Accordingly, JCR has evaluated that the reporting system by NEXCO CENTRAL is proper.



## **IV. Organizational Sustainability Initiatives**

#### JCR's Key Consideration in this Factor

In this section, JCR will evaluate whether the management of the fundraiser has positioned sustainability issues as significant high-priority challenges for management, has established a department that specializes in sustainability sectors or has positioned implementation policies/processes for sustainable finance or criteria for selecting eligible projects in collaboration with external organizations.

## **Description** Current Status of Evaluation Target and JCR Evaluation

JCR has highly evaluated that NEXCO CENTRAL has positioned sustainability issues as important management challenges, has implemented various initiatives with multi-stakeholders under the strong initiative of the management, has had the specialized departments and human resources on expressways from the perspective of both the environment and industrial safety and has been involved in the implementation of eligible projects based on their specialized insight.

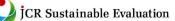
NEXCO CENTRAL Group set forth four management policies in its medium-term management plan, "Management Plan Challenge V 2021 - 2025."



#### Figure 19: Management Policy of NEXCO CENTRAL (Japanese)<sup>14</sup>

<sup>14</sup> NEXCO CENTRAL Report 2023 at https://www.cnexco.co.jp/corporate/csr/csr\_download/documents/2023/nexcocsr23\_2\_all.pdf





In accordance with these four management policies, NEXCO CENTRAL has promoted its efforts with "Steady maintenance for accelerating aging infrastructure" and "Response to more severe and more frequent natural disasters" as major measures in response to climate change adaptation and disasters such as earthquakes for which proceeds in this framework will be used.

The Company has listed "Taking on challenges to create new value adapting to environmental changes, such as digitalization and decarbonization" as the third item in the aforementioned management policies. JCR has confirmed that the item was included in the management policies with the following reasons: (1) the Japanese government set forth its policies to realize a digital society or a carbon-free society in 2020, (2) the government has recognized it is urgent to deal with the "utilization of accelerating digital technologies" and "environmental conservation to realize a carbon-free society," which is looking ahead to future changes as management issues assumed hereafter and (3) some employees in the Company made remarks that "it needs to advance projects for expressways or introduce IoT."

The Company has expressed that it has improved its statements on the environmental efforts, such as "renewable energy efforts" or "replacement of the conventional lighting apparatus with high-efficiency ones such as LED" in the "contribution to the preservation of the local environment and decarbonization" of the "taking on the challenge to create new value adapting to environmental changes, such as digitalization or decarbonization" in the "Management Plan Challenge V 2021-2025," and NEXCO CENTRAL has expressed that it has seriously regarded the environmental initiatives, such as its joint efforts with Chubu Electric Power Co., Inc. to improve its snow-melting system on the sidewalks in expressways' parking areas by directly sending the heat from heating in buildings developed by HOKUSUI SEKKEI CONSUL. Co., Ltd. to space installed under roads.

NEXCO CENTRAL sought opinions from external experts and reflected them in working out the overall structure or major policy proposals in formulating the "Management Plan Challenge V 2021-2025." These external experts have expressed their opinions on "national resilience," "new value creation," "carbon neutrality" and "fostering the next generation," and NEXCO CENTRAL formulated its management plan while referring to them.

NEXCO CENTRAL has operated its environmental management system with the ISO14001 certification. The Company's CEO has given instructions on the environmental management plan for the new fiscal year in management review, encouraging the top of the Company to manage the environment. Plans for the new fiscal year have been reported at the management meeting and have been disseminated as its policy.

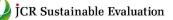
Environment and Technical Planning Division is in charge of making environmental impact assessment or determining policies on environmental measures for environmental issues. Comprehensive Safety Promotion Division, a specialized department, has comprehensively managed safety including occupational safety.

Accordingly, JCR has confirmed that NEXCO CENTRAL has implemented various initiatives with multi-stakeholders under the strong initiative of the management. JCR has also confirmed that





the Company has had specialized departments and human resources from the perspective of both the environmental and occupational safety of expressways and has been involved in the implementation of eligible projects based on their specialized insight.



# Evaluation Phase 3: Evaluation Results (Conclusions)

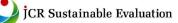
## SU 1(F)

In terms of this framework, JCR assigned "gs1 (F)" to "Green/Sociality Evaluation (Use of Proceeds)," "m1(F)" to "Management, Operation and Transparency Evaluation" and "SU 1(F)" to "JCR Sustainability Bond Framework Evaluation" based on the JCR Sustainability Finance Evaluation methodology. JCR has evaluated that this framework satisfies the criteria for the items required in "Green Bond Principles," "Social Bond Principles," "Sustainability Bond Guidelines,"

		Management, Operation and Transparency Evaluation					
		m1(F)	m2(F)	m3(F)	m4(F)	m5(F)	
Green/Social Evaluation	gs1(F)	SU 1(F)	SU 2(F)	SU 3(F)	SU 4(F)	SU5 (F)	
	gs2(F)	SU 2(F)	SU 2(F)	SU 3(F)	SU 4(F)	SU5(F)	
	gs3(F)	SU 3(F)	SU 3(F)	SU 4(F)	SU5(F)	N/A	
	gs4(F)	SU 4(F)	SU 4(F)	SU5(F)	N/A	N/A	
	gs5(F)	SU5(F)	SU5(F)	N/A	N/A	N/A	

#### <JCR Sustainability Bond Framework Evaluation Matrix>

(Responsible Analysts for this Evaluation) Atsuko Kajiwara and Kosuke Kajiwara



#### Important explanations of this Evaluation

1. Assumptions, Significance and Limitations of JCR Sustainability Finance Framework Evaluation

JCR Sustainability Finance Framework Evaluation, which is determined and provided by Japan Credit Rating Agency, Ltd. (JCR), covers the policies set out in the Sustainability Finance Framework, and expresses JCR's comprehensive opinion at this time regarding the appropriateness of the Green Project and/or Social Project as defined by JCR and the extent of management, operation and transparency initiatives related to the use of funds and other matters. Therefore, JCR Sustainability Finance Framework Evaluation is not intended to evaluate the effects of specific environmental improvements and social benefits the management, operation and transparency of individual bonds and borrowings, etc. to be implemented based on these policies. In the event an individual bond or individual borrowing based on this Framework is subject to a sustainability finance evaluation, a separate evaluation is needed. JCR Sustainability Finance Framework Evaluation does not prove the environmental improvement effects and social benefits of individual bonds or borrowings implemented under this Framework, and does not assume responsibility for their environmental improvement effects and social benefits of funds procured under the Sustainability Finance Framework measured quantitatively and qualitatively by the issuer or by a third party nominated by the issuer, but in principle it does not directly measure such effects.

2. Method used to conduct this evaluation

The methodologies used in this assessment are described in "JCR Sustainability Finance Evaluation" on the "Sustainable Finance ESG" section of the JCR website (https://www.jcr.co.jp/en).

3. Relationship with Acts Concerning Credit Rating Business

JCR Sustainability Finance Framework Evaluation is determined and provided by JCR as a related business, which is different from its activities related to the credit rating business.

4. Relationship with Credit Ratings

The Evaluation is different from the Credit Rating and does not assure to provide or browse a predetermined credit rating.

5. Third-Party Evaluation of JCR Sustainability Finance Framework Evaluation

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Glossary

JCR Sustainability Finance Framework Evaluation: This evaluates the extent to which the funds procured through Sustainability Finance are appropriated for green projects and/or social projects as defined by JCR and the degree to which the management, operation and transparency of the Sustainability Finance are ensured. Evaluations based on a 5-point scale are given from top to bottom using the SU 1(F), SU 2(F), SU3 (F), SU4 (F), and SU5 (F) symbols.

- Status of Registration as an External Evaluator of Sustainability Finance
  Registered as an External Reviewer of Green Bonds by the Ministry of the Environment
  - · ICMA (registered as an observer with the Institute of International Capital Markets)
- Status of registration as a credit rating agency, etc.
  - · Credit Rating Agency: the Commissioner of the Financial Services Agency (Rating) No.1
  - · EU Certified Credit Rating Agency
  - NRSRO: JCR has registered with the following four of the five credit rating classes of the U.S. Securities and Exchange Commission's Nationally Recognized Statistical Rating Organization (NRSRO): (1) financial institutions, broker-dealers, (2) insurance companies, (3) general business corporations and (4) governments and municipalities. If the disclosure is subject to Section 17g-7 (a) of the Securities and Exchange Commission Rule, such disclosures are attached to the news releases appearing on the JCR website (https://www.jcr.co.jp/en/).

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