



Japan Credit Rating Agency, Ltd.

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JCR Green Bond Framework Evaluation by Japan Credit Rating Agency, Ltd.

Japan Credit Rating Agency, Ltd. (JCR) announces the following Green Finance Framework Evaluation Results.

## JCR Assigned <u>Green 1(F)</u> to the Green Bond Framework of Nagano Prefecture

Subject : Nagano Prefecture Green Bond Framework

### <Green Bond Framework Evaluation Results>

<b>Overall Evaluation</b>	Green 1(F)
Greenness Evaluation (Use of Proceeds)	g1(F)
Management, Operation and Transparency Evaluation	m1(F)

### Chapter 1: Evaluation Overview

Nagano Prefecture has the fourth widest prefectural land in Japan, and the large forests, which account for 80% of them, provide a basis for rich water resources and a habitat for a wide variety of organisms. In order to pass on such natural environment to the next generation, Nagano Prefecture has formulated the Fourth Nagano Prefectural Environmental Basic Plan, which is based on the basic goal of "the rich natural and reliable life of Shinshu<sup>1</sup> to the future," based on the viewpoint of SDGs. This plan covers a five-year period from fiscal 2018 to fiscal 2022. The plan stipulates not only environmental conservation but also the resolution of various economic and social issues through environmental conservation, administrative agencies, and all other entities.

Nagano Prefecture is the first prefecture to declare a "Climate Emergency Situation" and at the same time has set out virtually zero carbon dioxide emissions in 2050. In June 2018, Nagano Prefecture was selected for the first time in the country as a "SDGs Future City" that proposes excellent efforts to achieve SDGs, with 28 other local governments, and is working to promote the Nagano Prefectural Five-Year Plan (Together, the Shinshu Creation Plan 2.0) based on SDGs perspective.

Nagano Prefecture has established the Green Bond Framework (this Framework) to issue Green Bonds as financing to tackle both the adaptive and mitigation aspects of climate change. Through this, it aims to promote efforts to mitigate the impact of natural disasters in Nagano Prefecture and achieve net zero carbon emissions in 2050. With the issuance of green bonds as an opportunity, it is also intended to foster momentum for local governments and local corporations

<sup>&</sup>lt;sup>1</sup> The word "Shinshu" is historic name of Nagano Prefecture.



to invest in ESG. JCR evaluated whether the Framework aligns with the Green Bond Principles (2018 edition) and the Green Bond Guidelines (2020 edition).<sup>23</sup>

Nagano Prefecture limits the eligible criteria to be invested in green bonds in this framework to those businesses that contribute to the following measures set out in the Nagano Prefecture Environmental Energy Strategy.

- (1) Renewable Energy Policy Package Aiming to Expand Power Generation with Renewable Energy
- (2) Building energy-saving policy package to promote comfortable energy-saving community development
- (3) Transportation and community-building energy conservation packages to promote comfortable energy conservation townships
- (4) Nagano Prefectural Forest Planting Guidelines for Expanding Wood Use and Promoting the Absorption and Fixation of Carbon Dioxide through Forest Maintenance to Curb Global Warming
- (5) Package for global warming adaptation measures to identify and forecast the effects of global warming and to promote adaptation measures by various entities

JCR recognizes that the eligibility criteria established in this framework by Nagano Prefecture as a green project contributing to the aforementioned policy package cover comprehensive measures in both aspects of mitigation and adaptation to climate change and contribute significantly to resolve environmental issues in Nagano Prefecture. In addition, the project selection process, the proceeds management system, and the post-issuance reporting system have been appropriately established and transparency is well ensured.

As a result, JCR assigns "g1 (F)" for "Greenness Evaluation (Use of Proceeds)" and "m1 (F)" for "Management, Operation and Transparency Evaluation". Consequently, JCR assigns "Green1 (F)" as an overall evaluation results to the bonds. Detailed evaluation results are discussed in detail in the next chapter.

This Green Bond Framework are considered to meet the standards for items required by the Green Bond Principles and the Green Bond Guidelines of the Ministry of Environment of Japan.

<sup>&</sup>lt;sup>2</sup> ICMA(International Capital Market Association) Green Bond Principles 2018

https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/

<sup>&</sup>lt;sup>3</sup> Green Bond Guidelines 2020 https and ://www.env.go.jp/press/files/jp/113511.pdf



# Chapter 2: Current Status of the project on each evaluation factor and JCR's evaluations

Evaluation Phase 1: Greenness Evaluation

JCR assigns "g1 (F)", the highest grade, to "Evaluation Phase 1: Greenness Evaluation". Rationale: 100% use of proceeds of the bond will be allocated to a green project, considering the factors described below.

(1) JCR's key consideration in this factor

In this section, JCR first determine whether the proceeds will be allocated for green projects that have clear environmental improvement effects (climate change mitigation or adaptation effects). Next, JCR assesses whether an internal department/division which is exclusively in charge of environment issues or a third party agency prove it sufficiently and have taken necessarily workaround or mitigation measures, in case of possibility on use of proceeds have negative impact on the environment. Finally, JCR confirms consistency with the Sustainable Development Goals (SDGs).

(2) Current status of evaluation targets and JCR evaluation

Overview of Use of Proceeds

### a. On the environmental improvement effects of the project

### < Framework for Use of proceeds>

Nagano Prefecture has defined the following use of proceeds in this framework. All use of proceeds are new investments.

	Green Eligible Project Classification and Target Projects			
I. R	Renewable energy: Installation of small-scale hydroelectric power stations			
	Clean Transportation: Subsidies for the Renewal of Vehicles of Regional Railways (Shinano Railway)			
a	Energy Efficiency: Upgrading and renovation of prefectural facilities and equipment (upgrading of ir-conditioning equipment, use of LEDs for lighting, upgrading of thermal insulation, etc.), construction of new facilities of prefectural facilities.			
IV. C	Climate Change Adaptation :			
. ,	Traffic infrastructure development (Additional equipment of Signal power supply, road disaster prevention work (legal construction), etc.)			
(2)	Renovation of rivers for flood damage countermeasures (expansion, drilling, etc.)			
(3)	Sand control, mountainous control, landslide, and measures against steep slope collapse			
V. E	Environmental sustainable management of natural resources and land use:			
Fe	orest development project in Shinshu (improvement of forest roads)			



#### Use of Proceeds 1: Renewable energy: Installation of small-scale hydroelectric power stations

i. The use of proceeds is selected based on Nagano Prefecture's comprehensive environmental strategy, which takes into account climate change mitigation and adaptation measures. The establishment of small-scale hydroelectric power stations has high significance in terms of the environment, such as the expansion of natural energy supply in Nagano Prefecture and the creation of disaster-resistant towns through the establishment of a local production and local consumption type energy network. The first use of proceeds are "renewable energy" in the Green Bond Principles and "renewable energy projects" in the Ministry of the Environment's Green Bond Guidelines.

Small hydroelectric power generation can stably supply electric power without being influenced by weather and timeframe, at the same time, environmental load during the construction phase is comparatively small. In addition, since the technology of hydroelectric power generation facilities itself has been established for a long time and is not complicated, the durability years are said to be about 75 to 100 years. In Japan, which has steep topography, Small hydroelectric power generation is a power generation system that is expected to expand supply as a locally produced, local consumption type and clean energy.

According to a survey by the Agency for Natural Resources and Energy, Nagano Prefecture, which has Japanese Alps, is one of the prefectures with a large amount of hydroelectric power (hydroelectric energy available technically and economically). As of December 2019, the number of small hydropower installations using FIT (Feed-in Tariffs) was No.1 nationwide, and there are more than 1600 sites with development potential in the future.

### (Hydro Capacity)

Hydro capacity is divided into three categories: "Already developed (hydraulic energy developed)," "Under construction," and "undeveloped (hydroelectric energy promising for future development)." Nagano Prefecture has 12,538 GWh of hydro capacity, of which 9,013 GWh is in the already developed and 3,449 GWh is in the undeveloped. As of March 31, 2019, Nagano Prefecture is ranked the third in the country and has high potential in all categories.<sup>4</sup>

In Japan, small hydropower was entrenched in various areas of Japan as a self-consumed type. Subsequently, Japanese electricity supply system became centralize, but since the Tohoku Earthquake and tsunami in 2011, the significance of small hydropower has been reviewed as a clean energy supply measure for local production and local consumption. On the other hand, small hydropower has multiple barriers and challenges before it can be realized, and its popularization has not progressed much, although the necessity is recognized. The following issues are cited as the background for this.

- Multiple laws and regulations (River Law, Electricity Business Act, Land Improvement Act, and Erosion Control Act) and complex licensing procedures span multiple departments in charge
- 2) Economic rationality
- 3) Technical capabilities
- 4) Understanding of the region

<sup>&</sup>lt;sup>4</sup> Agency for Natural Resources and Energy website.

https://www.enecho.meti.go.jp/category/electricity\_and\_gas/electric/hydroelectric/database/energy\_japan003/



In order to solve these problems and reduce the time required for development, regulations have been relaxed since 2011 and procedures have been partially simplified. With regard to economic rationality, the FIT system (Feed-in Tariff system) has been used to stabilize electricity sales revenues. In addition, when municipalities and private companies start small hydropower, subsidies have been used to curb initial investment.

In Nagano Prefecture, the Third Environmental Energy Strategy formulated in 2013 clarified measures to promote the popularization of renewable energy, including small hydropower. Since the several Departments in Nagano Prefecture have regulated small hydropower and coordination was difficult, a small hydropower caravan was established when the Third Environmental and Energy Strategy was formulated. The small hydropower caravan serves as a collective contact point for consultation by private businesses and municipalities with small hydropower project plans in cooperation with the relevant bureau in Nagano Prefecture. Nagano Prefecture plans to further expand the supply of renewable energy through small hydropower as an important measure to mitigate climate change.

The use of proceeds of the bonds under the framework is to finance the cost of installing small hydropower plants installed by the Nagano Prefecture itself and to assist in the installation.

Use of proceeds 2: Clean transportation: Subsidization to rolling stock upgrades by regional railway operators (Shinano Railway)

i. The use of proceeds 2 is selected based on Nagano Prefecture's comprehensive environmental strategy, including climate change mitigation and adaptation measures. CO<sub>2</sub> emission reduction effect is expected by upgrading the obsolete vehicles. The second use of proceeds are "clean transportation" in the Green Bond Principles and "clean transportation" in the Green Bond Guidelines of the Ministry of the Environment.

Nagano Prefecture is striving for clean transportation as an energy saving policy package for transport and urban development in the policy system of the Environmental Energy Strategy.

Shinano Railway is a railway company established in 1996 with the investment of Nagano Prefecture, line-side cities and towns, economic organizations, etc., and started railway business by transferring management between Karuizawa Station and Shinonoi Station on the Shin-etsu Main Line from JR East in October 1997, when the Hokuriku Shinkansen (bullet train) which connects Tokyo-Nagano route opened.

Since its opening, the company has operated trains (115 series) that were taken over from JR East. As they have been aging about 40 years since manufacturing, the company began introducing a new-model train SR1 series with superior energy-saving performance since fiscal 2019.

SR1 series (train with two cars) is equipped with universal design toilets, Wi-Fi, etc. compared to the conventional 115 series, making it more comfortable in the car. In terms of the environment, the conventional 115 series was made of steel, but SR1 series adopted a light-weight all-stainless steel body, and the weight of the car body was reduced while considering safety. In addition, the control system for controlling the acceleration and deceleration of trains has been replaced by VFD (variable-frequency drive) inverter controllers, which consume less power in SR1 series while 115 series adopted resistance brake control; regenerative braking, which operates the motor as a generator when the train brakes, and uses the generated electricity back to the overhead wires as energy for other trains in operation; and LEDs for illumination have been adopted. As a result, the annual power consumption has been reduced by 40% or more compared with the conventional 115 series, which is expected to reduce CO<sub>2</sub>.



Use of Proceeds 3: Energy Efficiency: Upgrading and renovation of prefectural facilities and equipment, construction of new facilities of prefectural facilities.

i. The use of proceeds 3 is selected based on Nagano Prefecture's comprehensive environmental strategy for mitigating climate change. Energy efficiency is expected to improve by constructing, renovating and upgrading facilities owned by the prefecture. The third use of proceeds is "Energy Efficiency" in the Green Bond Principles, and "Energy Conservation Projects" in the Green Bond Guidelines by Ministry of the Environment.

The Building Energy Conservation Policy Package under the Environmental Energy Strategy aims to disseminate environmentally energy-friendly buildings, and promotes the objective visualization of building energy performance when building new construction and purchasing, and selection in consideration of the building's environment and energy-saving performance.

Regarding the promotion of the choice of builders, the "Environment and Energy Performance Review System" is implemented for buildings. For buildings of medium-scale or larger size, it is mandatory to post the Environment and Energy Performance of Buildings, and for large-scale buildings, it is mandatory to report the Environment and Energy Plan of Buildings to the prefectural government.

With regard to facilities owned by the prefecture, new construction considering environmental energy performance is promoted through a consultation system concerning energy conservation renovation, etc. in the facility management of prefectural property, and the mechanism and experience of the prefectural consultation system are disseminated to municipalities. In addition, for existing buildings, the Nagano Prefecture is implementing lighting-LEDs and ESCO projects.

The Fourth Nagano Prefectural Basic Environmental Plan formulated in 2018 states the implementation of the following specific initiatives for the dissemination of environmentally energy-friendly buildings.

- "visualization" of energy performance
- Improvement of heat insulation performance to prevent heat shock and contribute to comfortable living
- Improving the technological capabilities of building contractors
- Establishing a production system by promoting the supply of high-quality wooden houses using local timber and fostering designers and technicians who will be responsible for these houses
- Reducing energy consumption in public facilities by promoting the use of LEDs for lighting in prefectural facilities, utilizing ESCO in aging facilities and energy-intensive facilities, and adopting thermal insulation in buildings and energy-saving devices
- Supporting leading energy-saving initiatives by utilizing a portion of the profits obtained from the electricity business of the Prefectural Corporate Bureaus

This framework include the use of proceeds for efforts to save energy, particularly in the construction of new prefectural facilities and renovation of facilities. The eligible criteria are calculated as BEI=0.9 or less according to the Building Environment and Energy Performance Plan Statement prepared in accordance with the Nagano Prefecture Global Warming Prevention Regulations, and the introduction or renovation of facilities that reduce the amount of new buildings or energy consumption by 20% or more from the previous level that are scheduled to introduce renewable energy. It is also noteworthy that the current all energy saving project has 40% energy saving effects. This initiative is highly evaluated by JCR for its target of new construction and renovation work which improves the energy efficiency of the prefecture-holding facilities and contributes to the long-term energy efficiency goals of the prefecture.



#### **Use of Proceeds 4: Climate Change Adaptation Project**

i. The use of proceeds 4 is selected based on Nagano Prefecture's comprehensive environmental strategy for adaptation measures against climate change. The eligibility criteria for adaptation projects established in this framework have been selected based on various hazard maps and resilience plans prepared based on climate change forecasts and the largest damage in the past, and it is expected that the disaster prevention functions of the prefecture will be enhanced. The forth use of proceeds is the "Adaptation to Climate Change" in the Green Bond Principles and the "Project for Sustainable Water Resource Management" in the Green Bond Guidelines of Ministry of Environment.

(1) Global Warming Adaptation Measures in Nagano Prefecture

In Nagano Prefecture, one of the 10 priority projects in the Third Environmental Energy Strategy is the Global Warming Adaptation Package, which aims to identify and forecast the impacts of global warming and promote adaptation measures to the effects of global warming. In 2018, the Second Nagano Prefecture Resilience Plan was formulated, and in light of the frequent occurrence of natural disasters in recent years, intensive "emergency inspections of critical infrastructures" and "three-year emergency measures" have been carried out in the consecutive three years since fiscal 2018, and social infrastructures have been made resilient to natural disasters. In addition, under the Typhoon Hagibis (2019) Disaster Recovery and Reconstruction Policy, the Government of Japan is promoting the reconstruction of social infrastructure in response to Typhoon Disaster.

Nagano Prefecture has established the following systems in cooperation with technology development organizations and diverse stakeholders for grasping the current situation for promoting climate change adaptation and forecasting future climate change. The results of this initiative will be examined and promoted in the field collaboration on methods, technologies, and policies related to adaptive, including the adaptation package based on the forecast of global warming mentioned above and the concrete measures listed in the resilience plan, in the Fourth Environmental Energy Strategy, which is currently being prepared.

The current use of proceeds is selected from the items mainly mentioned in the Resilience Plan to be regarded as adaptive measures to global warming. In the resilience plan of Nagano Prefecture, the resilience (adaptive) business is specified by the following steps. JCR confirmed through the disclosure materials and interviews with Nagano Prefecture that it took the procedures equivalent to the six steps required by Climate Resilience Principles established by Climate Bonds Initiative, an international NGO.

The adaptation projects covered in this framework are based on projected climate change impacts assessments and past catastrophic disaster experiences, and on the four steps outlined in the Resilience Plan.

(2) For adaptation projects covered by this framework

(2)-1: Risks assumed by the target adaptive project (common use)

- (2)-1-1 Assumption of the worst-case event (risk) that should not occur
- · Sedge disasters and flood damage (Typhoon Neoguri (2014) is assumed as the disaster level)
- level snowfall and snowfall disasters (February 2014 heavy snow disasters assumed as a disaster level)

(2)-1-2 Possible damages

· Inundation of houses and other buildings due to flooding of rivers caused by heavy rainfall

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- · Incidence of casualties and injuries due to lands flow, landslide, and other sediment disasters
- Inundation of houses and other buildings due to flooding of rivers caused by heavy rainfall
- · Incidence of casualties and injuries due to lands flow, landslide, and other sediment disasters
- · Suspension of administrative functions and information and communications functions
- Frequent Traffic Accidents Caused by Stopping Signals
- · Secondary damage caused by sediment-related disasters such as debris flows and landslides
- · Suspension of distribution and economic activities
- (2)-2: Items listed in the adaptive package as the target business and related measures
  - (2)-2-1: Transportation infrastructure development (Additional equipment of Signal power supply, road disaster prevention project (slope construction), etc.)

<Road Disaster Prevention Project (Slope Construction)>

- In Nagano Prefecture, which has a steep topological characteristics and fragile geologies, there are many events in which roads are disrupted due to heavy rainfall or sediment collapse caused by an earthquake. On the other hand, dwellings and tourist sites are dispersed from flat areas to mountainous areas, and the roads linking them extend to about 50,000 kilometer in the prefecture. It is necessary to improve roads in a prioritized and efficient manner from the viewpoint of disaster prevention and mitigation, such as improving the reliability of emergency transport routes.
- The eligible project of this framework is a road project to cope with disasters, and it is slope countermeasure construction mainly for preventing the landslide collapse. Through this construction, measures are being taken to prevent road disruptions in the event of a disaster and to prevent disruptions in rescue for victims and the transport of emergency goods.

<Signal Power Supply Unit>

- As various measures to prevent the functional shutdown of traffic lights caused by power failures and the frequent occurrence of traffic accidents that may occur as a result, it is effective to improve the signal power supply additional devices and to improve the direct-connection cable of the generator and generator to the traffic lights, but it is still only effective to develop some of them. Therefore, it is necessary to steadily proceed with the development from a medium-to long-term viewpoint.
- The prefectural government will promote the improvement of signal power supply additional equipment and the development of power generator direct connection cables in order to prevent traffic lights from stopping due to power outages.
- (2)-2-2: Renovation of rivers (countermeasure, drilling, etc.) for flood damage (flood control)
- Nagano Prefecture has decided to develop river facilities and flood control facilities and implement internal water measures so that prefectural residents can live safely and with peace of mind. Comprehensive flood control measures are being promoted in a focused manner together with the national government and municipalities. The River Renovation Plan is a plan based on this measure. In addition to hard flood control measures, in order to raise awareness of flood prevention, the prefecture has implemented a map of flood inundation scenarios in the event of the largest-scale rainfall, covering 34 rivers and 138 municipal hazard maps, and publicized it on the prefecture's website.



- (2)-2-3: Sand control, mountainous control, landslide, and measures against steep slope collapse
- Based on the experience of sediment disasters, etc. due to Typhoon Hagibis in 2019, Nagano Prefecture is promoting disaster countermeasures from the viewpoint of conservation of watershed areas and protecting the lives and property of residents. For this reason, in addition to measures for the flow of soil and stone, emergency sediment-related disasters to prevent disasters, enhancement and renovation of existing dam functions by gradual stone are scheduled to be implemented in 169 locations in 2019 and in a total of 176 locations in 2020.
- In addition, measures are planned to be started by fiscal 2022 for 55 facilities for requiring special help, 69 facilities related to the welfare of children and the elderly in a wooden one-story buildings and 12 facilities of the evacuation sites in the landslide/sediment disaster special warning area.
- In order to demonstrate the function of forests to prevent sediment-related disasters, the forest conservation project is designed to develop forests resistant to disasters, such as appropriate thinning and development of forest conservation facilities. In the prefecture, 200 villages (fiscal 2018 to fiscal 2022) are targeted as the number of villages to be newly conserved by the mountaineering business.

Use of proceeds 5: Environmental Sustainable Management Related to Natural Resources and Land Use: Forest Development Project in Shinshu (Development of Forest Roads)

- i. The use of proceeds 5 has been was selected based on Nagano Prefecture's comprehensive environmental strategy that takes into account climate change mitigation and adaption measures. This project contributes to sustainable forest management and has a variety of environmental improvement effects, such as improving CO<sub>2</sub> absorbing amounts of forests, cultivating water sources, preventing landslide disasters, and conserving biodiversity. Use of proceeds 5 is "environmentally sustainable management related to natural resources and land use" in the Green Bond Principles and "businesses related to sustainable management of natural resources and land use" in the Ministry of the Environment's Green Bond Guidelines.
- Significance of Forest Regeneration Related to the Conservation and Use of Biodiversity and Natural Environment

Japan is regarded as a "biodiversity hotspot" in the world, and Nagano Prefecture in particular is regarded as an abundant location of biodiversity. The rich biodiversity has been cultivated by the complex landscape with about 3,000 meters altitude, which is called the Japanese roof, as well as various new and old landscapes and geologies related to the formation of the Japanese Islands, diverse land use from agricultural land, undeveloped woodland near village and grassland to mountainous areas, and climate affected by the Sea of Japan, inland and the Pacific Ocean. However, the "Red List in Nagano Prefecture", which was revised from 2014 to 2015 due to the deterioration of wildlife habitats caused by development, excessive capture and extraction, the decline in the use of undeveloped woodland near village, the expansion of the distribution of Japanese deer, the migration and distribution of alien species, and the impact of global warming, enlisted 98 vertebrate animal and 804 vascular plant, threatening the habitat and growth of many flora and fauna.

In addition, as human activities in "Satochi-Satoyama" -undeveloped woodland near village- have shrunk due to recent changes in industrial structure and depopulation and aging of agricultural and mountain villages,



forests and degraded agricultural land that have not been properly managed have increased, and there are concerns about deterioration of the prefectural land-conservation function and the undeveloped woodland near village landscape.

### (2) Significance of Forest Regeneration Related to Reducing Global Warming

In the Environmental Energy Strategy, Nagano Prefecture has made comprehensive global warming countermeasures a third pillar in addition to improve energy efficiency and to expand renewable energy. Though the comprehensive global warming countermeasures consist of two measures for controlling global warming and measures for adapting to global warming, the forest construction is positioned as an effort which contributes to the purpose of the former. Nagano Prefecture is promoting the development of production infrastructure such as the forest roads network and the intensification of thinning, such as low-cost utilization, while giving consideration to public-interest functions so that its functions as an absorption source of carbon dioxide can be fully exercised. In addition, it aims to create forests that can sustainably supply resources by implementing appropriate main logging and planting to diversify forest age.

In addition to measures to combat global warming in forests, Shinshu's recent forest development projects will also contribute to the economic revitalization of the prefecture by promoting the expansion of use of prefectural timber through a variety of promotions, such as civil engineering and furniture, creating a new forest industry that links forests with other industries, and promoting efforts to make mountainous villages a sixth industry. This framework covers the development of forest roads within the project.

### b. Negative impact on the environment

For each project, Nagano Prefecture has established the following risks that are assumed as negative impacts on the environment and mitigation measures. JCR confirmed that the system had been established to take appropriate countermeasures through hearings with Nagano Prefecture and confirmation of related materials.

I. Renewable energy			
Assumed risks	Risk mitigation measures		
<ol> <li>Negative impacts on ecosystems</li> <li>Other adverse effects on water rights, such as declining water volumes</li> </ol>	With regard to large-scale projects that are subject to the environmental impact assessment system, the effects of the project on the environment are investigated, forecasted, and evaluated while listening to the opinions of residents and relevant local governments, and the impact of the project on the environment is avoided or reduced. Regarding prefectural businesses of a certain size or larger, the impacts of the projects on the environment have been avoided and reduced in accordance with the Nagano Prefectural Principles for the Promotion of Environmental Considerations, such as Public Services.		

### II. Clean transportation

Since this case is a subsidy for purchasing a new rolling stocks by the Shinano Railway, it is not expected to have a serious negative impact on environment. On the other hand, with regard to the appropriate disposal of old rolling stocks, etc., the railway company shall be responsible for the disposal.



III. Projects related to energy efficiency

(1) Construction of new buildings with high energy-saving performance and renovation of prefectural facilities

<ol> <li>Consideration of occupational safety during construction</li> <li>Scattering of hazardous waste such as asbestos</li> </ol>	<ol> <li>Safety measures, etc. for contractors are stipulated in the Public Building Construction Standard Specification, etc.</li> <li>Checks are made to ensure proper disposal in accordance with applicable laws such as the Air Pollution Control Law, the Industrial Safety and Health Law, the Waste Disposal Law, the Industrial Safety and Health Regulations, and the Asbestos Hazards Prevention Regulations.</li> </ol>
(2) Business of introducing highly er	nergy-efficient equipment and facilities to prefectural facilities
<ol> <li>Noise and vibration caused by construction</li> <li>Adverse effects of inappropriate treatment of equipment and facilities prior to replacement</li> <li>Scattering of hazardous waste such as asbestos</li> <li>It is confirmed that the disposal of used refrigerants, etc. v be properly processed in accordance with applicable laws a regulations such as the Fluorocarbons Emission Control La</li> <li>Checks are made to ensure proper disposal in accordance w applicable laws such as the Air Pollution Control Law, Industrial Safety and Health Law, the Waste Disposal Law, Industrial Safety and Health Regulations, and the Asbes Hazards Prevention Regulations.</li> </ol>	
IV. Businesses related to adaptation	on to climate change
Preservation of soil, conservation of waterways, ecosystems such as endangered species, and ecosystems associated with large-scale land development With regard to large-scale projects that are subject to environmental impact assessment system, the effects of the pro- on the environment are investigated, forecasted, and evalue while listening to the opinions of residents and relevant I governments, and the impact of the project on the environment avoided or reduced. Regarding prefectural businesses of a ce size or larger, the impacts of the projects on the environment I been avoided and reduced in accordance with the Nag Prefectural Principles for the Promotion of Environment Considerations, such as Public Services.	
V. Environmental Sustainable Ma	anagement of Natural Resources and Land Use
<ol> <li>Consideration for soil conservation</li> <li>Conservation of endangered</li> </ol>	<ol> <li>Heavy machinery and machinery used for construction work are specified in the special specification to be environmentally 11/22</li> </ol>

species and other ecosystems and ecosystems		conscious. Chainsaw oil is explicitly specified in the specification for the use of biodegradability.
	2)	Habitat surveys are carried out if information on endangered species and poultry, etc. is available, construction of habitats is discontinued, or construction is carried out outside the reproduction period.

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### c. Consistency with SDGs goals and Targets

JCR evaluated that the projects to be realized through this framework will contribute to the following SDGs goals and targets, referring to ICMA's SDGs mapping.



#### Goal 6: Ensure availability and sustainable management of water and sanitation for all

Target 6.6. By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.



Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all.

Target 7.2. By 2030, increase substantially the share of renewable energy in the global energy mix.

Target 7.3. By 2030, double the global rate of improvement in energy efficiency.



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.



Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Target 15.2. By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

Evaluation Phase 2: Management, Operations and Transparency Evaluation

JCR assigns "m1 (F)", the highest rating on JCR evaluation Phase 2: Evaluation on Management and Operation and Transparency.

Rationale: The project has allocated the funding and implemented the businesses as planned through a firmly equipped management and operation system and high transparency as described below.

1. Appropriateness and Transparency concerning selection standard and processes of the use of proceeds.

### (1) JCR's key consideration in this factor

In this section, JCR confirms that the objectives to be achieved through the green bond, the criteria for selecting green projects, the appropriateness of the process, and the series of processes are appropriately disclosed to investors.

### (2) Current status of evaluation targets and JCR evaluation

a. Goal

<The Framework for the goal>

■ Basic Goals of the Fourth Basic Environmental Plan

Grow Together: Building partnerships with a variety of entities

Linking to the Future: Sustainability

The rich nature of Shinshu region... The majestic mountains that Nagano Prefecture prides itself on, clean water and air, forests, rural landscapes, diverse ecosystems, etc.

Ensure the living environment: lifestyle realized through the integrated improvement of the economy, society, and the environment (sustainable development of the economy, ensuring that everyone plays a role and is able to live with peace of mind and maintaining an affluent natural environment)

- The Fourth Nagano Prefectural Basic Environmental Plan covers the following items, and targets are set for each item and measures are formulated and implemented.
  - · Matters relating to the building of a sustainable society
  - · Contribute to realize a decarbonizing society
  - · Conservation and use of biodiversity and the natural environment
  - · Matters relating to the conservation of the water environment
  - Matters relating to the preservation of the air environment, etc.
  - · Matters relating to the formation of a recycling-oriented society

■ In addition to the above, this province has first declared a "climate emergency" as a state and at the same time has reported a substantial zeroes of CO<sub>2</sub> emissions in 2050. Also, in June 2018, we were selected for the first time nationwide together with 28 other local governments as a "SDGs Future City," which proposes excellent initiatives for achieving SDGs. It has been established and is working to promote the Nagano Prefecture Comprehensive Five-Year Plan (Shinshu Creation Plan 2.0) based on SDGs perspective.

In 2018, Nagano Prefecture formulated its second plan for resilience, and is implementing various measures for resilience. Moreover, in light of the situation of natural disasters that have become increasingly severe in recent years, in fiscal 2018 we carried out emergency inspections of critical infrastructure, and as "Three-Year Emergency Measures for Disaster Prevention, Disaster Reduction, and Strengthening of National Land," it is intensively working to maintain the functions of material infrastructure. In addition, under the Typhoon Hagibis (2019) Recovery and Reconstruction Policy, Japan is promoting the reconstruction of social infrastructure from the viewpoint of better reconstruction (build-back-better).

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By issuing green bonds to finance efforts to adapt and mitigation climate change, Nagano Prefecture will promote efforts to mitigate the impact of natural disasters in the prefecture and achieve virtually zero-carbon dioxide (CO<sub>2</sub>) emissions by 2050. In addition, it will use the issuance of green bonds as an opportunity to foster momentum for local governments and businesses to invest in ESG.

<JCR's Evaluation of the Framework>

JCR confirmed that Nagano Prefecture had set clear targets for the environment in its Basic Environmental Plan and was actively implementing various measures in its implementation. They also confirmed that all the use of proceeds stipulated in the current Green Bond Framework is the projects to be implemented based on policies stipulated in the Environmental Energy Strategy. Based on the above, JCR has evaluated that the projects covered in this framework are consistent with the Nagano Prefectural Environmental Plan and Environmental Strategy.

#### b. Selection standard

Project Classification Name	Eligibility Criteria
I. Renewable Energy	Subsidization to the installation of small hydropower plants
II. Clean transportation	Subsidy for the introduction of rolling stocks that are more energy efficient than current rolling stocks
III. Projects related to energy efficiency	<ol> <li>Introduction or renovation of equipment, etc. that reduces energy consumption by 20% or more from the previous level</li> </ol>
<ul> <li>(1) Business of introducing highly energy-efficient equipment and facilities to prefectural facilities, and renovation of prefectural facilities</li> </ul>	(2) Calculations in the "Building Environment and Energy Performance Plan Report" prepared in accordance with the Nagano Prefectural Regulations on Measures to Prevent Global Warming. New buildings with BEI=0.9 or less or planned introduction of renewable energy facilities
(2) Construction of new prefectural facilities with high energy-saving performance	
IV. Climate Change Adaptation	Disaster prevention and mitigation measures, which are positioned in the Climate Change Adaptation Plan to prevent disasters caused

Nagano Prefecture has established the following selection criteria for projects.

	by climate change, such as water disasters		
V. Environmental Sustainable Management of Natural Resources	Projects aimed at conserving prefectural land, cultivating water sources, preventing global warming, and conserving biodiversity		
and Land Use			

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For small hydropower plants, there are various definitions of small hydro, and Nagano Prefecture does not draw rigorous lines, but it is substantially intended for micro hydro of 100kW or less, mini hydro of 100 to 1000 kW, and small hydro of 1000 to 10,000kW. JCR evaluates the above eligibility criteria as the level for projects that are highly significant as measures to curb global warming and adaptive to climate change.

### c. Processes

<The Framework for Selection process>

The Finance Section of the General Affairs Department and the Environmental Policy Section of the Environment Department interview the relevant departments, extract businesses that are expected to provide environmental benefits, and examine their eligibility to select the target projects. The General Manager of the General Affairs Department makes final decisions on selected businesses.

<JCR's Evaluation of the Framework>

Since the use of proceeds for green bonds implemented by Nagano Prefecture is diverse, inter-departmental coordination is important. Nagano Prefecture has an Environmental Affairs Department as a specialized department related to the environment, and the Finance Section of the General Affairs Department and the Environment Policy Section of the Environment Department cooperate to coordinate the relevant departments in a unified manner. In addition, in calculating the environmental improvement effects that are necessary for determining the eligibility of the target business, the Environmental Policy Division calculates the results using a calculation formula independently prepared based on data collected from relevant departments, which is a highly quantitative and transparent selection process.

Based on the above, the goals, selection criteria, and processes of Nagano Prefecture established in this framework have been properly established. In addition, Nagano Prefecture will disclose these standards and implementations to investors through press releases, preliminary evaluation reports provided by JCR, and this evaluation report when implementing the Green Bond based on this framework, thereby ensuring transparency.



### 2. Appropriateness and Transparency of management of the proceeds

### (1) JCR's key consideration in this factor

It is generally assumed that the management method of the proceeds varies by the issuer. JCR assesses whether proceeds procured through the issuance of green bonds are appropriated to the green projects and whether a mechanism and internal system are in place to enable easy tracking and management of the appropriation of proceeds.

JCR also attaches importance to evaluating the management and operation of the unallocated proceeds as well as to confirming that the proceeds procured from the bond will be allocated to the green projects at early stage.

### (2) Current status of evaluation targets and JCR evaluation

<The Framework for proceeds management>

### (How to Link Proceeds to Assets)

The proceeds are fully tied to a pre-selected individual project.

### (Method of Tracking and Management of Procured Funds)

The Finance Section of the General Affairs Department manages all bond issuance through a prefectural debt management table whenever a budget is formulated. Prefectural debt management tables record operating expenses, prefectural bond allocation amount, etc. by business segment. With regard to the proceeds of green bonds as well, the procured funds are fully linked to individual projects selected in advance by separately managing the subject projects and other projects according to the prefectural debt management table.

In the case of local governments, it is necessary to allocate the revenue for the fiscal year to the expenditures of the same fiscal year. Therefore, all the funds procured from Green Bonds in this prefecture will be allocated for the subject project during the same fiscal year.

#### (Internal control and External Audits for Tracking Management)

Regarding the fund procured by the green bonds, the name of the project and the allocated amount are compiled and reported to the General Affairs Department Manager after the end of the fiscal year,

#### (Method of Management of Unallocated proceeds)

Unallocated proceeds is administered by the Accounting administrator in cash in the deposit accounts of the designated financial institution.

#### <JCR's Evaluation of the Framework>

The use of Green Bonds as defined in this Framework represents new investments in green eligible businesses as defined in this Framework and is not expected to be used for any other purposes.

The project stipulated in this framework is scheduled to be completed for the year in which the bond is issued as a new investment. In addition, the internal control system has been properly established because the management of incoming and outgoing funding is managed in the prefectural debt management table and reported to the general manager of the general affairs department at the end of the fiscal year.

Based on the above, JCR evaluates the appropriateness and transparency of fund management in Nagano Prefecture as high.



### 3. Reporting

### (1) JCR's key consideration in this factor

In this section, JCR evaluates whether the disclosure system for investors, etc. before and after the issuance of green bonds is planned in a detailed and effective manner at the time of the issuance of green bonds

### (2) Current status of evaluation targets and JCR evaluation

### (Framework for Reporting)

### 1. Reporting on the proceeds allocation

The project name and allocated amount will be disclosed in the following fiscal year after the bond issuance on the Nagano Prefecture website.

### 2. Impact reporting

Annual disclosure is planned on the Nagano prefecture website.

- The following impact reporting is planned as an environmental improvement effect.
  - I. Renewable energy: Number of small hydropower plants installed, power generation capacity, and volume of CO<sub>2</sub> emission reductions

II. Clean Transportation: Volume of CO2 emission reduction by Renewal of Rolling Stocks

III. Energy Efficiency: List of projects with energy-efficient updates and renovations, and energy reduction rates

IV. Climate Change Adaptation:

(1) Developing transportation infrastructure

Location name, number of locations, extension, etc. of implemented projects

- (2) River renovation for flood damage countermeasures
- Location name, number of locations, extension, etc. of implemented projects
- (3) Sand control, mountainous control, landslide, and measures against steep slope collapse Location name, number of locations, extension, etc. of implemented projects
- V. Environmental Sustainable Management of Natural Resources and Land Use Location name, number of locations, extension, etc. of implemented projects

### <JCR's Evaluation of the Framework>

### a. Reporting on the proceeds allocation

The use of proceeds will be published to investors on the Nagano Prefecture website, JCR evaluation reports and other. In addition, as was described in the previous section, the proceeds will be allocated to all the target projects within the same fiscal year after procurement, and therefore, it is expected no unallocated amounts may occur by the end of the fiscal year.

### b. Impact Reporting

Renewable energy is disclosed on Nagano Prefecture's website for existing development projects, and transparency is expected to continue to be ensured. For high energy efficiency projects, the energy reduction rate is quantitatively calculated for each project. It is extremely difficult to quantitatively calculate the environmental improvement effects of adaptation projects and forest development project. Therefore, the above impact level is limited to reporting the output from the results of the implementation of this project. However, the preconditions for climate change forecasts, scenario analyses based on them, and various hazard maps (landslide disasters,



floods, etc.) are disclosed, and JCR confirms that this target project is scheduled to be implemented in areas of high urgency in these hazard maps.

JCR evaluates that the above reporting is planned to be disclosed appropriately to investors, in terms of both the allocation of proceeds and the effects of environmental improvement.



### 4. Organization's environmental efforts

### (1) JCR's key consideration in this factor

In this section, JCR evaluates whether the issuer's management positions environmental issues as a high priority management issue, and whether the green bond policy, process and the criteria for selecting green projects are clearly defined through the establishment of a department specializing in the environmental field or through the assistance of external organizations.

### (2) Current status of evaluation targets and JCR evaluation

Nagano Prefecture is a place where the three largest mountain ranges (Japanese Alps) lie and has beautiful nature and undeveloped woodland near village filled with greenery and water. With the aim of protecting its beauty nature and revitalizing regions in the face of the declining birthrate and aging population, responses to climate change have been incorporated into each measure as a keyword and aggressive initiatives are being developed.

Major initiatives that Nagano Prefecture has been making on a continuous basis are described below.

• "First Regional Renewable Energy International Conference in Asia"

In September 2017, Nagano Prefecture invited people with expertise from Germany, Japan, and other countries to resolve issues faced by local governments aiming to popularize and expand renewable energy. They shared excellent examples of the latest status of renewable energy and energy conservation, as well as the prospects for expanding them in the future, and exchanged opinions on initiatives aimed at realizing a 100% renewable energy region. In addition, a summit was held by the heads of Japanese and local governments, in which they announced the Nagano Declaration that they would "declare the start of new initiatives and coordinated actions aiming at a 100% renewable energy region."

• Membership in ICLEI

In September 2018, Nagano Prefecture joined the "ICLEI (International Council for Local Environmental Initiatives)" of the international organization jointly sponsored by the above international conference and expressed their attitude to actively engage in interactions with local governments promoting advanced initiatives at home and abroad.

• "SDGs Future Cities"

Nagano Prefecture, together with the other 28 prefectures, was selected as a SDGs Future City in June 2018. The general plan of this prefecture incorporates the idea of SDGs, and all four key issues are common in that the plan is an initiative that contributes to SDGs Goal 13 "Climate Action."

• "Declaration on Climate Emergencies"

In December 2019, the Climate Emergency Declaration (CED) was triggered, and Nagano Prefecture declared net zero CO<sub>2</sub> emissions in 2050. The determination showed the concrete direction of promoting energy conservation and popularization and expand of renewable energy, and further advancing the creation of areas that are self-reliant and resilient to disasters, and aiming at sustainable development.

In order to realize various declarations, Nagano Prefecture is tackling each eligible green project in accordance with the Nagano Prefecture Environmental Energy Strategy under the Fourth Nagano Prefecture Environmental Basic Plan. In addition, Nagano Prefecture is implementing a series of concrete measures, such as strengthening information dissemination, building a cooperative system, and various subsidy systems, so that not only the prefecture's own businesses but also various stakeholders can tackle environmental issues. For example, Nagano



Prefecture selects and discloses small hydroelectric power generation candidates, sends them to the people of Nagano Prefecture, and also conducts subsidy projects. Its potential is the second largest in the country due to the abundant water flowing from steep mountains in Nagano Prefecture and the enhancement of agricultural water channels. Promoting the installation of small-scale hydroelectric power stations is one of the effective renewable energy resources in the prefecture in terms of topography, and the proactive increase in the use of renewable energy in addition to solar power generation is significant as a unique initiative that takes advantage of the characteristics of Nagano Prefecture. In Japan as a whole, while it is important to establish mega-solar and wind power plants, it is also necessary to be cautious about the establishment of new transmission and distribution networks in Japan, which is experiencing a declining birthrate and aging population. Considering the difficulty of linking them to new grids and the risk of outages due to the increase in severe disasters, the popularization of autonomously distributed energy is extremely important from the viewpoint of strengthening the urban energy infrastructure. In Nagano Prefecture, on December 20, 2019, Shinshu Roof Solar Potential Map was released prior to other prefectures. According to disclosure materials from Nagano Prefecture, this map covers the largest area in the world. Regarding forest restoration, which constitutes a large part of the prefectural land, the "Shinshu Forest Development" project is called to support sustainable forest management and to revitalize the economy through the utilization of diverse forests such as forest therapy.

With regard to climate change adaptation, Nagano Prefecture has established a cooperative framework with a diverse range of stakeholders to ensure that initiatives from climate measurement, scenario analysis, and forecasting to implement adaptation measures are integrated. Various studies have been conducted based on such forecasts. For example, in March 2012, the Nagano Prefecture Institute for Environmental Conservation compiled the "Study Report on Development Methods for Developing Adaptive Measures in Nagano Prefecture," which predicted the impact of global warming by mountainous ecosystems, forest ecosystems, and industries after the actual and projected status of global warming. In addition, scenarios and models for IPCC Fifth Assessment Report were developed, and the assumed adaptive measures in Nagano Prefecture were examined based on these scenarios and models. Nagano Prefecture plans to more clearly link global warming forecasts and scenario analysis to concrete measures in the work of the revision of the Fourth Environmental Energy Strategy.

Based on the above, JCR confirmed that Nagano Prefecture is implementing various initiatives together with various stakeholders under a strong initiative aimed at resolving environmental issues and revitalizing regional economies based on the environment. JCR also confirmed that a number of experts on environmental issues are involved in designing and implementing environmental policies that will be used to finance green bonds, as shown in the Shinshu Climate Change Platform.



### ■Evaluation result

Based on the JCR Green Finance Evaluation Methodology, JCR assigned "g1 (F)" for "Green Evaluation (Use of Proceeds)" and "m1 (F)" for "Management, Operation and Transparency Evaluation". Consequently, JCR assigned "Green 1 (F)" as an overall evaluation. The framework meets the standards for the requirements of the Green Bond Principles and the Green Bond Guidelines (2020 Edition) issued by Ministry of Environment Japan.

	[JCR Green Bond Framework Evaluation Matrix]					
Management, Operation and Transpar			sparency Eval	parency Evaluation		
		m1(F)	m2(F)	m3(F)	m4(F)	m5(F)
	g1(F)	Green1(F)	Green2(F)	Green3(F)	Green4(F)	Green5(F)
Greenness	g2(F)	Green2(F)	Green2(F)	Green3(F)	Green4(F)	Green5(F)
	g3(F)	Green3(F)	Green3(F)	Green4(F)	Green5(F)	Not qualified
Evaluation	g4(F)	g4(F) Green4(F) Green4(F)	Green5(F)	Not	Not	
tion	g=(1')		UICEII4(I')	Oreens(1)	qualified	qualified
	g5(F)	g5(F) Green5(F)	Green5(F)	Not	Not	Not
	go(r) Greeno(r) Greeno(	Greens(1 <sup>*</sup> )	qualified	qualified	qualified	

### [JCR Green Bond Framework Evaluation Matrix]

#### ■ Subject

### Issuer: Nagano Prefecture

#### [Assignment]

Subject	Evaluation		
	JCR Green Bond Framework Evaluation: Green 1 (F)		
Green Bond Framework	Greenness Evaluation:g1(F)		
	Management, Operation and Transparency Evaluation :m1(F)		

Analysts in charge of this evaluation: Atsuko Kajiwara, Eriko Kikuchi, Kosuke Kajiwara and Hiroya Kakiuchi

#### Important Explanation of the Green Bond Framework Evaluation

1. Assumptions, significance, and limitations of JCR Green Bond Framework Evaluation

JCR Green Bond Framework evaluation, which is granted and provided by Japan Credit Rating Agency, Ltd. (JCR), covers the policies set out in the Green Bond Framework, and expresses the overall opinion of JCR at this time regarding the appropriateness of the Green Project as defined by JCR and the extent of management, operation and transparency initiatives related to the use of proceeds and other matters. Therefore, it is not intended to evaluate the effects of specific environmental improvements, management and operation systems, and transparency of individual bonds and borrowings, etc. to be implemented based on these policies. In the event that an individual bond based on this framework is subject to a green bond evaluation, it is necessary to conduct a separate evaluation. In addition, JCR Green Bond Framework, and does not assume responsibility for environmental improvement effects of funds procured under this framework, and does not assume responsibility for environmental improvement effects of funds procured under the Green Bond Framework, although JCR confirms the quantitative and qualitative measures by the issuer or a third party requested by the issuer.

- Methodology used to carry out this evaluation
   The methodologies used in this evaluation are described in "JCR Green Finance Evaluation Methodology" on the "Sustainable
   Finance ESG" section of the JCR website (https://www.jcr.co.jp/en/).
- Relationship with Credit Rating Business
   The act of granting and providing an evaluation of JCR Green Bond Framework is conducted by JCR as an ancillary business and
   differs from the act related to the credit rating business.
- Relationship with Credit Ratings
   This evaluation differs from credit ratings and is not intended to not promise to provide or make available for inspection a
   predetermined Credit Rating.
- Independence of JCR Green Bond Framework Evaluation There are no capital relationships or personnel relationships that could cause any possibilities of conflicts of interest between the subject party and JCR.

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#### Glossary

JCR Green Bond Framework Evaluation: The extent to which the funds procured through green bonds are allocated for green projects as defined by JCR, and the degree to which the management, operation, and transparency of the green bonds are managed. Evaluations are performed on a 5-point scale, from the top using the Green1 (F), Green2 (F), Green3 (F), Green4 (F), and Green5 (F) symbols.

#### Status of Registration as an External Evaluator of Green Finance

- Ministry of the Environment's external green bond reviewer registration
- · ICMA (registered as an observer with the International Capital Markets Association)
- Members of the Working Group on UNEP FI Positive Impact Finance Principles
- CBI Approved Verifier
- Other status of registration as a credit rating agency, etc.
  - Credit Rating Agency Commissioner (Rating) No. 1
  - EU Certified Credit Rating Agency
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