°CICERO Shades of Green

Stuttgarter Straßenbahnen AG
Green Financing Second Opinion

July 18, 2022

Stuttgarter Straßenbahnen AG (SSB) is a German public transport company responsible for local public transport in and around Stuttgart, Germany. SSB is wholly owned by the city of Stuttgart and one of Germany's largest local transport providers, carrying around 617,000 passengers each day via 48 bus lines, 19 light rail lines, a rack railway, and a cable car.

Proceeds under the framework will finance projects in i) rail networks and vehicles, and ii) zero emission buses (green hydrogen or electric); refinancing is not currently foreseen. For both categories, related infrastructure, such as depots and charging equipment, is also eligible. Zero-direct-emission public transport represents a Dark Green investment. While SSB is currently considering a carbon neutral depot (e.g. with heating via wastewater heat utilization, near-surface geothermal energy or heat pump), the framework contains no environmental or climate criteria for depots, and fossil fuel heating of depots is not excluded under the framework. Rail investments are expected to dominate.

SSB can point to many sound facets in its approach to environmental and climate issues, however it would benefit from measuring and reporting on emissions and setting targets on reducing these. We welcome that the 'SSB Climate Neutral 2035' working group is in the early stages of addressing this topic. The selection process under the framework is generally sound, though the environmental representative does not hold a veto. While impact reporting metrics are relevant, SSB could commit to disclosing methodologies and assumptions used in its calculations.

CICERO Green assesses that SSB is likely aligned with relevant EU Taxonomy substantial contribution to climate change mitigation criteria. In respect of the Do No Significant Harm criteria, SSB is deemed likely aligned, except in two cases. Firstly, the adaptation criteria, where it is not currently systematically using climate projections or scenarios (on a best practices basis) in performing vulnerability screening. Secondly, though it considers it to be the case, SSB is unable to substantiate whether at least 70% (by weight) of the non-hazardous construction and demolition waste generated in construction is prepared for re-use, recycling, and other material recovery. We consider SSB likely fulfils the EU Taxonomy's minimum social safeguards.

Based on the overall assessment of the project types in SSB's framework, governance and transparency considerations, the framework receives an overall **CICERO Dark Green** shading and a governance score of **Good.** We encourage SSB to use climate scenarios when assessing physical risk.

SHADES OF GREEN

Based on our review, we rate the SSB's green financing framework **CICERO Dark Green.**

Included in the overall shading is an assessment of the governance structure of the green financing framework. CICERO Shades of Green finds the governance procedures in SSB's framework to be **Good.**

GREEN BOND AND LOAN PRINCIPLES

Based on this review, this Framework is found to be aligned with the principles.

°CICERO Dark Green

°CICERO Shades of Green

Contents

1 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's framework dated May 2022. This second opinion remains relevant to all green bonds and/or loans issued under this framework for the duration of three years from publication of this second opinion, as long as the framework remains unchanged. Any amendments or updates to the framework require a revised second opinion. CICERO Green encourages the client to make this second opinion publicly available. If any part of the second opinion is quoted, the full report must be made available.

The second opinion is based on a review of the framework and documentation of the client's policies and processes, as well as information gathered during meetings, teleconferences and email correspondence.

Expressing concerns with 'Shades of Green'

CICERO Green second opinions are graded dark green, medium green or light green, reflecting a broad, qualitative review of the climate and environmental risks and ambitions. The shading methodology aims to provide transparency to investors that seek to understand and act upon potential exposure to climate risks and impacts. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The shades are intended to communicate the following:

Shading	Examples
Dark Green is allocated to projects and solutions that correspond to the long-term vision of a low-carbon and climate resilient future.	Solar power plants
Medium Green is allocated to projects and solutions that represent significant steps towards the long-term vision but are not quite there yet.	Energy efficient buildings
Light Green is allocated to transition activities that do not lock in emissions. These projects reduce emissions or have other environmental benefits in the near term rather than representing low carbon and climate resilient long-term solutions.	Hybrid road vehicles

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, key governance aspects that can influence the implementation of the green financing are carefully considered and reflected in the overall shading. CICERO Green considers four factors in its review of the client's governance processes: 1) the policies and goals of relevance to the green financing framework; 2) the selection process used to identify and approve eligible projects under the framework, 3) the management of proceeds and 4) the reporting on the projects to investors. Based on these factors, we assign an overall governance grade: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.

2 Brief description of SSB's green financing framework and related policies

Stuttgarter Straßenbahnen AG (SSB) is a German public transport company responsible for local public transport in and around Stuttgart, Germany. SSB is wholly owned by the city of Stuttgart via Stuttgarter Versorgungs- und Verkehrsgesellschaft mbH and, following a direct award in 2019, will provide Stuttgart's public transport services until the end of 2040.[1]

SSB is one of Germany's largest local transport providers, carrying around 617,000 passengers each day via 48 bus lines, 19 light rail lines, a rack railway, and a cable car. SSB is responsible for the operation and maintenance of its transport vehicles, related facilities and infrastructure, and the management and utilization of its company-owned real estate (such as depots, a workshop, office buildings, and other specialist buildings).

Environmental Strategies and Policies

The State of Baden-Württemberg has a goal to be climate neutral by 2050, with direct emissions reduced by 95% by 2050 compared to 1990 levels, while Stuttgart itself aims to become climate neutral by 2035. SSB has established a 'SSB Climate Neutral 2035' working group to anticipate changes required because of the city's target, though it notes that for its purposes 'climate neutral' extends to only Scope 1 and 2 emissions. Moreover, the city has an action plan on sustainable transport, pursuant to which it aims to reduce the amount of conventionally operated (fossil fuel) vehicles by 20% (though no target date is set). This action plan sets out specific measures to be taken by the public transport providers, such as the expansion of the bus and light railway network, including the increased use of hybrid and fully electric buses.

SSB's aim is to contribute to Stuttgart's climate strategy by offering public transport alternatives to reduce private vehicle use (e.g. cars). To ensure public transport is a viable alternative to private vehicle use, SSB has set the following goals: 1) continued expansion of transportation service offering, 2) renewal and maintenance of infrastructure and vehicles, 3) maintain the highest levels of service quality, 4) operate in an efficient manner with streamlined processes, 5) develop innovative transport solutions to further improve local transport services (e.g. the development of mobility hubs for interlinking different transport types including rental bikes and pedal scooters but also motorized private transport).

SSB does not currently measure its GHG emissions, though its 'SSB Climate Neutral 2035' working group is in the early stages of addressing this topic.

SSB purchases guarantees of origin for the electricity powering its trams and buildings. As of December 31, 2020, SSB had 54 hybrid buses, four zero-emission buses, as well as 127 Euro VI buses and 85 EEV (enhanced environmentally friendly vehicles) in its fleet. All diesel buses have nitrogen oxide reduction and closed particulate filters. SSB does not currently have a target for the number of zero emission buses in its fleet, though it stated that, when a bus reaches the end of its useful life, it aims to replace it with hybrid or electric vehicles. Nonetheless, given its fleet is expected to grow, the number of non-zero emission vehicles may increase in absolute terms.

SSB includes certain requirements around circular economy in its tenders, though states that market conditions determine the extent this can factor into decision making. SSB employs an 'End of Life Recycling Concept'

[1] Pursuant to Regulation (EC) 1370/2007 on public transport services by rail and by road.

whereby 'most' elements of its trams are recycled (for those elements that cannot be recycled, some are disposed, and others are e.g. used for energy recovery). Furthermore, SSB informed us that 99% of its buses are sold in the secondary market for re-use.

In respect of physical climate risk, SSB informed us that past weather events are taken into consideration in planning, for example heavy rainfall and increasing summer temperatures. This extends to the use of extreme weather scenarios, though we understand that climate change scenarios are not employed. SSB also considers increases of probability of such events due to climate change. SSB does not report in accordance with TCFD recommendations.

SSB produces an annual report which includes a chapter on its sustainability approaches.

Use of proceeds

SSB will use any funds raised under its framework to finance or re-finance, in whole or in part, new and/or existing eligible green projects. SSB has informed us, however, that re-financing is not currently foreseeable.

Eligible green projects under SSB's framework relate to the clean transportation project category. More specifically, investments will go towards 1) its rail network, vehicles, and related infrastructure, and 2) its bus fleet and related infrastructure (specifically related to zero emission buses). SSB has informed us that rail investments and associated infrastructure account for a large part of its investment program: in its current business plan (2022 – 2027), around 83% of investments will be in the rail network, vehicles, and related infrastructure, while around 5% will be in its bus fleet. Given that investments under the framework fall under the business plan, most proceeds under the framework will therefore likely go towards rail.

The framework states that, based on relevance and feasibility to the extent possible, it intends to comply with the EU Taxonomy, though it also notes that SSB is not currently required to align with or report on its alignment with the EU Taxonomy.

The framework does not contain any express exclusions.

Selection

The selection process is a key governance factor to consider in CICERO Green's assessment. CICERO Green typically looks at how climate and environmental considerations are considered when evaluating whether projects can qualify for green finance funding. The broader the project categories, the more importance CICERO Green places on the governance process.

SSB has established a green finance expert group, consisting of representatives of its finance and controlling departments, as well as its environmental protection department, and meets at least twice a year. More specifically, the green finance expert group includes the head of controlling, head of accounting, department of funding, department of environmental protection, and the executive office.

The financing and controlling departments provide proposals to the green finance expert group, which then manages the selection of eligible green projects in accordance with the criteria in the framework. Voting is by simple majority. The finance and controlling departments manage a list of selected projects, which is additionally validated by the SSB's management board. The management board is advised by a member of the environmental department for these purposes.

SSB informed us that it will screen for lifecycle impacts during the selection process, to the extent possible, though we understand a full LCA will not be performed. For example, embedded emissions in buses will contribute to any purchasing decision. It will also screen for controversial projects, and points towards its past experiences dealing with and minimizing controversies.

Management of proceeds

CICERO Green finds the management of proceeds of SSB to be in accordance with the Green Bond Principles and Green Loan Principles.

SSB's finance and controlling departments are responsible for the management of proceeds raised under the framework. Any proceeds raised under the framework will be added to SSB's general funds and allocated to eligible green projects. SSB informed us that the proceeds under the framework are tracked. SSB aims to allocate proceeds raised under the framework within 6-9 months of issuance. Unallocated funds will remain in SSB's business accounts, and it confirmed unallocated proceeds would not be used for purposes other those under the framework.

If a project no longer fulfills the eligible green project criteria, SSB will provide a suitable substitution option project that does satisfy the eligible green project criteria, and ensure an equivalent amount is allocated to such substitute project.

Reporting

Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green finance programs. Procedures for reporting and disclosure of green finance investments are also vital to build confidence that green finance is contributing towards a sustainable and climate-friendly future, both among investors and in society.

SSB will report annually on the allocation of net proceeds to eligible green projects, with the report made available on its website. Such reporting will aggregate all SSB's outstanding green finance instruments. The allocation reporting will include, for example, a description of the eligible green projects within each category, the type of financing instruments utilized and respective outstanding amounts, the amount of funds allocated to each category of eligible green projects, the amount and/or percentage of financing versus refinancing, and the balance of unallocated proceeds (if any).

In respect of impact reporting, SSB will report on qualitative and quantitative indicators. For rail projects, example KPIs are increased capacity (available seat kilometers, passenger kilometers in regular traffic) and customer satisfaction (measures via qualitative surveys). For its bus fleet, example KPIs are CO_2 emissions per kilometer, and total fuel consumption of its bus fleet. SSB has not committed to including the methodologies and assumptions used in calculating impacts in its report.

SSB does not currently intend to have its reporting externally reviewed or verified.

3 Assessment of SSB's green financing framework and policies

The framework and procedures for SSB's green finance investments are assessed and their strengths and weaknesses are discussed in this section. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects; weaknesses are typically areas that are unclear or too general. Pitfalls are also raised in this section to note areas where SSB should be aware of potential macro-level impacts of investment projects.

Overall shading

Based on the project category shadings detailed below, and consideration of environmental ambitions and governance structure reflected in SSB's green financing framework, we rate the framework **CICERO Dark Green.**

Eligible projects under the SSB's green financing framework

At the basic level, the selection of eligible project categories is the primary mechanism to ensure that projects deliver environmental benefits. Through selection of project categories with clear environmental benefits, green bonds and financings aim to provide investors with certainty that their investments deliver environmental returns as well as financial returns. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed and that the selection process should be "well defined".

Category	Eligible project types	Green Shading and some concerns
Clean Transportation	Rail networks, vehicles, and related infrastructure. Illustrative investment cases: construction of new tracks and depots.	**Dark Green** ✓ Electrified or otherwise zero tailpipe emission public transport is crucial in a 2050 future. SSB purchases guarantees of origin for the electricity powering its trams and buildings, and fossil fuel heating of trams is excluded. ✓ SSB intends to replace up to 70 rail vehicles, starting in 2025 with the award of contract planned for mid-2022. SSB informed us that it screens for lifecycle impacts in selection, however the extent to which environmental/climate factors can play a role is determined by market conditions. It has provided some examples of environmental/climate considerations in tendering, for example the use of recyclable materials, the use of energy recovery systems, and the use of refrigerants with global warming potential (GWP) < 10.

		✓ There are no express environmental criteria for depots under the framework, however SSB informed us that its new depot that is being planned is (currently) intended to be carbon neutral (for example, wastewater heat utilization, near-surface geothermal energy, heat pump and pellet boiler are being considered as heating sources). SSB informed us that parking halls for its vehicles are not heated, nor are areas where work is carried out on the vehicles. However, there is fossil fuel heating (natural gas and district heating) in some other areas of current depots. ✓ We understand that purchase of new ticket machines and of digital infrastructure can be financed. ✓ Related infrastructure cannot include parking spaces for private vehicles (spaces and access roads for service vehicles may be financed), and SSB has also confirmed that fossil fuel powered equipment or service vehicles cannot be financed. Construction and maintenance work nonetheless entails associated emissions and should be monitored and minimized.
Clean Transportation	Bus fleet: Transformation to zero-emission bus fleet, such as - charging infrastructure for zero emission buses, - construction of new and refurbishment of existing bus depots for zero emission buses.	**Dark Green** ✓ Zero-emission public transport represents a Dark Green investment given it is essential in a 2050 future. ✓ Buses themselves will also be a focus, where SSB will focus on electric and hydrogen buses. SSB does not currently know the share of electric compared to hydrogen buses. Hybrids are not eligible. ✓ The benefits of electric transportation depend on the electricity mix used in charging: charging infrastructure needs to be developed in parallel to greening the grid, particularly in countries such as Germany with comparatively high grid emissions factors.[2] Moreover, the production of batteries in charging

2 In 2020, Germany' grid emissions factor was 311gCO2e/kWh see: https://www.eea.europa.eu/ims/greenhouse-gas-emission-intensity-of-1

	infrastructure (and the sourcing of their raw materials) can have substantial climate and environmental impacts. These should be mitigated through suitable supply chain considerations.
	✓ There are no express environmental criteria for depots under the framework, for example in respect of energy use. SSB informed us that parking halls for its vehicles are not heated, nor areas where work is carried out on the vehicles. However, there is fossil fuel heating (natural gas and district heating) in some other areas of current depots.
	✓ Fossil fuel heating of buses is excluded (heating will be from e.g. heat pump or electric heater).
	✓ SSB has informed us about lifecycle considerations when procuring buses (beyond direct emissions), for example the recyclability of materials.
	✓ SSB confirmed that hydrogen buses would be powered by green hydrogen.

Table 1. Eligible project categories

Background

Despite energy efficiency improvements and increased electrification and the use of alternative fuels, transportation is responsible for 24% of direct CO_2 emissions from fuel combustion, with road vehicles accounting for nearly three quarters of these emissions.[3] According to the IPCC, the largest amount of emissions savings from transport come from switching from inefficient modes of transport (e.g. private cars) to mass transit.[4]

For projects aimed at like-for-like replacement of transport infrastructure, the improvements in environmental performance depend on the fuel type and efficiency. While electric modes of transportation are preferable to those that directly use fossil fuels, there remain emissions associated with their production and use (for example from fossil fuel derived electricity). The production method of hydrogen should also be considered e.g. if a vehicle uses 'green' hydrogen from renewable energy or 'blue' hydrogen that involves natural gas in its production.

3 https://www.iea.org/topics/transport
4 https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter8.pdf

EU Taxonomy

The EU Taxonomy, which entered into force in 2021, seeks to set out common classification systems to determine the environmental sustainability of activities. The EU-taxonomy regulation[5] defines six environmental objectives. To be considered environmentally sustainable, an activity must substantially contribute to one or more of the six objectives, not significantly harm any of the other six objectives (Do-No-Significant-Harm - DNSH) and comply with the technical screening criteria (TSC). In June 2021, EU published its delegated acts outlining the TSC for climate adaptation and mitigation objectives.[6] The DNSH-criteria are developed to make sure that progress against some objectives is not made at the expense of others and recognizes the relationships between different environmental objectives.

CICERO Green has assessed eligible projects in SSB green financing framework against the mitigation thresholds and the DNSH criteria for relevant activities in the delegated act adopted in June 2021 (Annex 1). Relevant EU-Taxonomy activities are: 1) urban, suburban and road passenger transport, and 2) infrastructure enabling low-carbon road transport and public transport.

CICERO Green assesses that all the project categories are likely aligned with the substantial contribution to climate change mitigation criteria in the EU Taxonomy. Other than the gaps listed below, SSB also appears likely aligned with the DNSH-criteria.

Main gaps

Climate change adaptation

In respect of climate change adaptation, SSB appears to be likely partially aligned. While SSB considers past and potential (extreme) future weather events, it is not systematically using climate projections or scenarios (on a best practices basis) in performing vulnerability screening.

Transition to circular economy

In respect of transition to circular economy requirements for infrastructure enabling low-carbon road passenger transport and public transport, SSB has informed us that the requirement that 'at least 70% (by weight) of the non-hazardous construction and demolition waste […] generated on the construction site is prepared for re-use, recycling and other material recovery […]' is not incorporated into German law. As such, while it expects it has a high rate, it cannot provide the necessary information to conclude.

Alignment with minimum social safeguards

To qualify as a sustainable activity under the EU regulation certain minimum social safeguards must be complied with. CICERO Green has assessed SSB's social safeguards with a focus on human and labor rights. On the basis on information provided by the company, we take the sectoral, regional and judicial context into account and focus on the risks likely to be the most material social risks.

CICERO Green considers that SSB appears to fulfil the minimum social safeguards of the EU Taxonomy. SSB is a heavily regulated State-owned entity and focuses on fulfilling its legal requirements in respect of social risks. The requirements are, among other places, prescribed in the Supply Chain Due Diligence Act (*Lieferkettensorgfaltspflichtengesetz*), entering into force in 2023. As part of complying with the requirements in this Act, SSB is introducing a new supplier risk management system, with increased screening of potential and existing suppliers. SSB has however informed us that it considers the risk of exploitation in its supply chain to be low. In the construction sector, where the use of subcontractors can imply social risks, SSB emphasizes the predominance of German contractors and to the inclusion of legal requirements in contracts with them. While

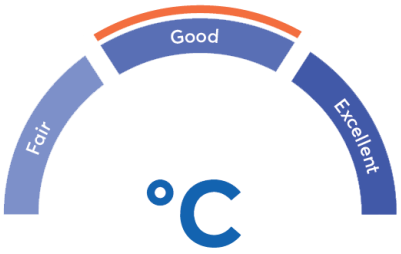
5 EU-Taxonomy regulation (2020/852), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0852&from=EN
6 taxonomy-regulation-delegated-act-2021-2800-annex-1_en.pdf (europa.eu)

these elements to some extent can mitigate these risks, these should not be seen as a substitute for active contractor screening, engagement, and follow up.

Governance Assessment

Four aspects are studied when assessing SSB's governance procedures: 1) the policies and goals of relevance to the green financing framework; 2) the selection process used to identify eligible projects under the framework; 3) the management of proceeds; and 4) the reporting on the projects to investors. Based on these aspects, an overall grading is given on governance strength falling into one of three classes: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.

SSB can point to many sound aspects of its approach to environmental and climate issues, and certain lifecycle and circular economy considerations in procurement. It would, however, benefit from measuring and reporting on emissions, and setting targets for reducing these. The 'SSB Climate Neutral 2035' working group is in the early stages of addressing this topic. The use of climate scenarios would, moreover, enhance its approach to physical cliamte risk.



The selection process under the framework is generally sound. It involves, for example, environmental competence (though they do not hold a veto) and SSB has confirmed that it undertakes some screening for lifecycle impacts.

SSB has chosen sound reporting metrics, and its green bond reporting will dovetail with an increased focus on more general sustainability reporting over the last few years. Note, however, that SSB has not committed to disclosing its methodologies and assumptions used in calculating impacts, and there are no plans for external review of its reporting. There are also no explicit metrics for infrastructure investments, for example energy performance of depots.

The overall assessment of SSB's governance structure and processes gives it a rating of **Good.**

Strengths

It is a strength that SSB's framework relates only to zero emission transportation and associated infrastructure. Moreover, fossil fuel heating of vehicles is excluded.

Weaknesses

We find no material weaknesses in SSB's framework.

Pitfalls

While its framework focus on zero emission buses, SSB does not currently have a target for the increase of such buses in its fleet and is still actively purchasing fossil fuel powered and hybrid vehicles. As its fleet is expected to grow, the number of non-zero emission vehicles may increase in absolute terms. This may also impact certain impact metrics under the framework, more specifically the total fuel consumption of its bus fleet may increase.

While it is currently designing and considering a carbon neutral depot, there are no express climate or environmental criteria in the framework for depots, for example in respect of energy use. We therefore encourage SSB to emphasize such considerations in the selection process. Some fossil fuel heating is used in current depots.

SSB confirmed it will use green hydrogen for hydrogen powered buses. Due to potentially high future demand for green hydrogen in Germany, SSB should remain vigilant on climate benefits of hydrogen versus battery technology.

SSB generally shows a good understanding of physical risk, however we encourage it to use climate scenarios in its evaluations and to consider reporting in line with TCFD recommendations.

Appendix 1:
Referenced Documents List

Document Number	Document Name	Description
1	Green Financing Framework (May 2022)	
2	Annual Report (2021)	
3	End of Life Recycling Concept (Rail Vehicles)	
4	End of Life Recycling Concept (Buses)	
5	Presentation to CICERO Shades of Green (June 2022)	

Appendix 2: EU Taxonomy criteria and alignment

Complete details of the EU taxonomy criteria are given in taxonomy-regulation-delegated-act-2021-2800-annex-1_en.pdf (europa.eu)

Urban, suburban and road passenger transport

Framework activity	**Clean transportation**		
Taxonomy activity	**6.3 Urban, suburban and road passenger transport (NACE Code H49.31, H49.3.9 and N77.11)**		
	EU Technical mitigation criteria	**Comments on alignment**	**Alignment**
Mitigation criteria	• The activity provides urban or suburban passenger transport and its direct (tailpipe) CO_2 emissions are zero.[7] • Until 31 December 2025, the activity provides interurban passenger road transport using vehicles designated as categories M2 and M3[8] that have a type of bodywork classified as 'CA' (single-deck vehicle), 'CB' (double-deck vehicle), 'CC' (single-deck articulated vehicle) or 'CD' (double-deck articulated vehicle)[9], and comply with the latest EURO VI standard, i.e. both with the requirements of Regulation (EC) No 595/2009 and, from the time of	All trams and buses purchased under the framework will have zero direct (tailpipe) emissions.	Likely aligned.

7 This includes Motor buses with type of bodywork classified as 'CE' (low-floor single-deck vehicle), 'CF' (low-floor double-deck vehicle), 'CG' (Articulated low-floor single-deck vehicle), 'CH' (Articulated low-floor double-deck vehicle), 'CI' (open top single deck vehicle) or 'CJ' (open top double deck vehicle), as set out in point 3 of part C of Annex I to Regulation (EU) 2018/858
8 As referred to in Article 4(1), point (a)(i), of Regulation (EU) 2018/858.
9 As set out in point 3 of part C of Annex I to Regulation (EU) 2018/858

	the entry into force of amendments to that Regulation, in those amending acts, even before they become applicable, and with the latest step of the Euro VI standard set out in Table 1 of Appendix 9 to Annex I to Regulation (EU) No 582/2011 where the provisions governing that step have entered into force but have not yet become applicable for this type of vehicle.[10] Where such standard is not available, the direct CO_2 emissions if the vehicles are zero.		
	EU Taxonomy DNSH-criteria	**Comments on alignment**	**Alignment**
Climate change adaptation	The physical climate risks that are material to the activity have been identified (chronic and acute, related to temperature, wind, water, and soil) by performing a robust climate risk and vulnerability assessment with the following steps[11]: (a) screening of the activity to identify which physical climate risks from the list in Section II of this Appendix may affect the performance of the economic activity during its expected lifetime; (b) where the activity is assessed to be exposed to physical climate risks, a climate risk and vulnerability	**Information provided by issuer** The City of Stuttgart has a climate adaptation concept. The climate adaptation concept contains proposals for measures on how, for example, Stuttgart's affiliated companies such as SSB can adapt to climate change. SSB is in close contact with the city's Department of Environmental Protection on this. The measures contained in the climate adaptation concept that are relevant for SSB concern local public transport and include, for example, certain adaptations to heavy rainfall events and a further expansion of green rail tracks. In the technical infrastructure department, in addition to the findings regarding the state of the art of the various facilities, observations from corresponding weather events in the past are also taken into account. For example, the issue of heavy rainfall in the downtown area is regularly considered by SSB and the City of Stuttgart, and findings from the investigations regarding our buildings are implemented.	Likely partially aligned.

10 Until 31/12/2021, the EURO VI, step E as set out in Regulation (EC) No 595/2009
11 The Taxonomy is referring to Appendix A in the Taxonomy Annex 1.

	assessment to assess the materiality of the physical climate risks on the economic activity; (c) an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate projections and assessment of impacts are based on best practice and available guidance and take into account the state-of-the-art science for vulnerability and risk analysis and related methodologies in line with the most recent Intergovernmental Panel on Climate Change reports, scientific peer-reviewed publications, and open source or paying models. For existing activities and new activities using existing physical assets, the economic operator implements physical and non-physical solutions ('adaptation solutions'), over a period of time of up to five years, that reduce the most important identified physical climate risks that are material to that activity. An adaptation plan for the implementation of those solutions is drawn up accordingly. For new activities and existing activities using newly built physical assets, the economic operator integrates the adaptation solutions that reduce the most important	With regard to the increasingly high temperatures in the summer months, affected electrical installations have long been protected by air conditioning against the effects of the high temperatures. Track systems and the effects of the weather are also regularly checked and adjusted if necessary. --- According to SSB, weather scenario considerations are used, for example once-in-a-century weather events are considered. However, it is not currently systematically using climate projections or scenarios (on a best practices basis) in performing vulnerability screening.	

	identified physical climate risks that are material to that activity at the time of design and construction and has implemented them before the start of operations. The adaptation solutions implemented do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; are consistent with local, sectoral, regional or national adaptation strategies and plans; and consider the use of nature-based solutions or rely on blue or green infrastructure to the extent possible.		
Sustainable use and protection of water and marine resources (water management)	N/A	N/A	N/A
Transition to circular economy	Measures are in place to manage waste, in accordance with the waste hierarchy, both in the use phase (maintenance) and the end-of-life of the fleet, including through reuse and recycling of batteries and electronics (in particular critical raw materials therein).	**Information provided by the issuer** The circular economy of SSB provides for the longest possible use of products through repair, reuse, and recycling. This prevents the generation of waste and minimizes the amount of waste that ultimately must be disposed of. On recycling management, reference should be made to SSB's waste register: "By systematically documenting all our waste, we can transparently track how our waste (hazardous and non-hazardous) is disposed of. Waste is considered from waste origin to waste disposal". The waste register is based on a 5-stage waste hierarchy (in accordance with §6 of the German Kreislaufwirtschaftsgesetz, KrWG), compliance with which is also	Likely aligned.

		required by SSB, for example, when inviting tenders for construction work (in the specifications for construction work). The aim of the waste hierarchy is to avoid disposal. As an example for the application at SSB, the processing of track ballast can be mentioned. The track ballast produced during track bed maintenance is reprocessed by a service provider so that it meets our criteria for new track ballast and can be used again by us. --- According to SSB, most elements of its trams are recyclable and recycled, while it sells on it 99% of it buses to the secondary market for re-use.	
Pollution prevention and control	• For road vehicles of categories M, tyres comply with external rolling noise requirements in the highest populated class and with Rolling Resistance Coefficient (influencing the vehicle energy efficiency) in the two highest populated classes as set out in Regulation (EU) 2020/740 of the European Parliament and of the Council[12] and as can be verified from the European Product Registry for Energy Labelling (EPREL). • Where applicable, vehicles comply with the requirements of the most recent applicable stage of the Euro VI heavy duty emission type approval set out in	SSB has confirmed its buses and their components comply with the relevant Regulations.	Likely aligned.

12 Regulation (EU) 2020/740 of the European Parliament and of the Council of 25 May 2020 on the labelling of tyres with respect to fuel efficiency and other parameters, amending Regulation (EU) 2017/1369 and repealing Regulation (EC) No 1222/2009 (OJ L 177, 5.6.2020, p. 1)

	accordance with Regulation (EC) No 595/2009		
Protection and restoration of biodiversity and ecosystems	N/A	N/A	N/A

Infrastructure enabling low-carbon road passenger transport and public transport

Framework activity	**Clean transportation**		
Taxonomy activity	**6.15 Infrastructure enabling low-carbon road transport (NACE Code F42.11; F42.13; F71.1 and F71.20)**		
Taxonomy version	**EU Technical mitigation criteria**	**Comments on alignment**	**Alignment**
Mitigation criteria	• The activity complies with one or more of the following criteria: (a) the infrastructure is dedicated to the operation of vehicles with zero tailpipe CO2 emissions: electric charging points, electricity grid connection upgrades, hydrogen fueling stations or electric road systems (ERS); (b) the infrastructure and installations are dedicated to transshipping freight between the modes: terminal infrastructure and superstructures for loading, unloading and transshipment of goods; (c) the infrastructure and installations are dedicated to urban and suburban public passenger transport, including associated signaling systems for metro, tram and rail systems. • The infrastructure is not dedicated to the transport of fossil fuels.	In respect of the use of proceeds, the bus fleet will satisfy limb (a) and limb (c). Investments in the tram system will satisfy limb (c). The infrastructure is dedicated to the transport of passengers, not fossil fuels.	Likely aligned.
	EU Taxonomy DNSH-criteria	**Comments on alignment**	**Alignment**
Climate change adaptation	Please see under "Urban, suburban and road passenger transport".	See under 'Urban, suburban and road passenger' above.	Likely partially aligned.

Sustainable use and protection of water and marine resources (water management)	Environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed with the aim of achieving good water status and good ecological potential as defined in Article 2, points (22) and (23), of Regulation (EU) 2020/852, in accordance with Directive 2000/60/EC of the European Parliament and of the Council, and a water use and protection management plan, developed thereunder for the potentially affected water body or bodies, in consultation with relevant stakeholders. Where an Environmental Impact Assessment is carried out in accordance with Directive 2011/92/EU of the European Parliament and of the Council, and includes an assessment of the impact on water in accordance with Directive 2000/60/EC, no additional assessment of impact on water is required, provided the risks identified have been addressed.	**Relevant background information** Germany adopted the Water Framework Directive into law via the Federal Water Act and relevant state-level legislation. **Information provided by the Issuer** SSB complies with the German Water Resources Act (Wasserhaushaltsgesetz, WHG); the WHG is mandatory for SSB. The WHG has various implications for SSB, e.g. for the storage of hazardous substances or vehicle washing. Washing water from the vehicle washing facilities is collected, cleaned, and reused in the cycle. Wastewater from the workshops and kitchens is treated in separators for oil and grease. In the process, oil and sludge settle out. As a result, the quality of the wastewater improves to such an extent that the limits set by the City of Stuttgart for wastewater discharge can be complied with at all times.	Likely aligned.
Transition to circular economy	At least 70 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material defined in category 17 05 04 in the European List of Waste established by Commission Decision 2000/532/EC) generated on the construction site is prepared for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, in accordance	See under 'Urban, suburban and road passenger' above, though note that SSB has informed us that the requirement that 'at least 70% (by weight) of the non-hazardous construction and demolition waste […] generated on the construction site is prepared for re-use, recycling and other material recovery […]' is not incorporated into German law. As such, while it expects it has a high rate, it cannot provide the necessary information to conclude.	Not enough information to conclude.

	with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol[13]. Operators limit waste generation in processes related construction and demolition, in accordance with the EU Construction and Demolition Waste Management Protocol and taking into account best available techniques and using selective demolition to enable removal and safe handling of hazardous substances and facilitate re-use and high-quality recycling by selective removal of materials, using available sorting systems for construction and demolition waste.		
Pollution prevention and control	• Where relevant, noise and vibrations from use of infrastructure are mitigated by introducing open trenches, wall barriers or other measures and comply with Directive 2002/49/EC. • Measures are taken to reduce noise, dust and pollutant emissions during construction or maintenance works.	**Relevant background information** Germany adopted Directive 2002/49/EC into law via the Federal Immission Control Act.	Likely aligned.
Protection and restoration of biodiversity and ecosystems	• As per Appendix D of the Annex: - An Environmental Impact Assessment (EIA) or screening[14] has been completed, for activities within the Union, in accordance with Directive	**Information provided by the Issuer** This aspect is particularly relevant for SSB in the case of new construction measures in the rail sector. In the case of new construction measures, requirements result from corresponding planning approval procedures	Likely aligned.

13 Available at https://ec.europa.eu/growth/content/eu-construction-and-d

14 The procedure through which the competent authority determines whether projects listed in Annex II to Directive 2011/92/EU is to be made subject to an environmental impact assessment (as referred to in Article4(2) of that Directive).

	2011/92/EU. For activities in third countries, an EIA has been completed in accordance with equivalent national provisions or international standards.[15] - Where an EIA has been carried out, the required mitigation and compensation measures for protecting the environment are implemented. - For sites/operations located in or near biodiversity-sensitive areas (including the Natura 2000 network of protected areas, UNESCO World Heritage sites and Key Biodiversity Areas, as well as other protected areas), an appropriate assessment[16], where applicable, has been conducted and based on its conclusions the necessary mitigation measures[17] are implemented. • Where relevant, maintenance of vegetation along road transport infrastructure ensures that invasive species do not spread. • Mitigation measures have been implemented to avoid wildlife collisions.	(Planfeststellungsverfahren). For example, the land consumption / land use for the project "U6 extension to the airport" had to be compensated. For this reason, the SSB renaturalized a previously sealed area in the neighborhood. --- SSB also confirmed it is required to carry out EIAs under German law and to implement mitigation measures arising out of these.	

15 For example, IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks.
16 In accordance with Directives 2009/147/EC and 92/43/EEC, or, for activities located in third countries, in accordance with equivalent national provisions or international standards, for example IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.
17 Those measures have been identified to ensure that the project, plan or activity will not have any significant effects on the conservation objectives of the protected area.

°CICERO Shades of Green

Appendix 3:
About CICERO Shades of Green

CICERO Green is a subsidiary of the climate research institute CICERO. CICERO is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international cooperation. CICERO has garnered attention for its work on the effects of manmade emissions on the climate and has played an active role in the UN's IPCC since 1995. CICERO staff provide quality control and methodological development for CICERO Green.

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green bond investments. CICERO Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO Green is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure. CICERO Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

We work with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions (ENSO). Led by CICERO Green, ENSO contributes expertise to the second opinions, and is comprised of a network of trusted, independent research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University, the International Institute for Sustainable Development (IISD) and the School for Environment and Sustainability (SEAS) at the University of Michigan.

- **2020** External Assessment Provider Of The Year, Environmental Finance Green Bond Awards
- **2020** Largest External Review Provider In Number Of Deals, Climate Bonds Initiative Awards
- **2019** External Assessment Provider Of The Year, Environmental Finance Green Bond Awards
- **2019** Largest Green Bond SPO Provider, Climate Bonds Initiative Awards
- **2018** External Assessment Provider Of The Year, Environmental Finance Green Bond Awards
- **2018** Largest External Reviewer, Climate Bonds Initiative Awards
- **2017** Best External Assessment Provider, Environmental Finance Green Bond Awards
- **2016** Most Second Opinions, Climate Bonds Initiative Awards