



ADIF-Alta Velocidad Green Finance Second Opinion

October 18, 2019

ADIF-Alta Velocidad is a state-owned public corporate, operating under the supervision of the Ministry of Public Works of the Spanish Government. ADIF-Alta Velocidad is responsible for the construction and management of Spain's high speed rail network, as well as other activities such as management of the high-speed stations and the supply of energy.

The green finance framework lists eligible projects within the clean transportation category to promote reduction of CO₂ emissions in the transportation sector in Spain. The issuer will allocate all proceeds to new lines and rail line extensions for Spain's electric high-speed rail network as well as maintenance, upgrades and energy efficiency of the rail system.

CICERO Green views development and improvement of the railway systems as essential to reach the well below 2°C target. Electric transportation such as high speed rail is only as clean as the methods by which the electricity is produced. Currently only about a third of Spain's electricity generation is renewable, while the rest is fossil fuel based or nuclear. Consequently, awareness should be raised regarding the indirect GHG emissions, stemming from the production of electricity to power rail and strive to keep increasing their efficiency. It is reasonable to expect that in the future Spain's energy mix will continue to become less carbon intensive, which reinforces the potential benefits of investing in rail transport.

ADIF-Alta Velocidad has ambitious climate targets, which aim to reduce its carbon footprint by 25 % by 2030. The issuer is currently developing a new Plan to Combat Climate Change 2018-2030 which will include clear targets for emission reduction for 2020, 2025 and 2030 as well as a plan to begin the implementation of TCFD recommendations.

Based on the overall assessment of the projects that will be financed under this framework, and governance and transparency considerations, ADIF-Alta Velocidad's updated green finance framework receives a **CICERO Dark Green** shading and a governance score of **Excellent**. The framework would benefit from stronger climate resilience assessments, especially for new railway projects and more rigorous climate considerations for railway stations and associated technical buildings.

SHADES OF GREEN

Based on our review, we rate the ADIF-Alta Velocidad's green finance framework **CICERO Dark Green**.

Included in the overall shading is an assessment of the governance structure of the green finance framework. CICERO Shades of Green finds the governance procedures in ADIF-Alta Velocidad's framework to be **Excellent**.



GREEN BOND AND GREEN LOAN PRINCIPLES

Based on this review, this updated framework is found in alignment with the principles.





Contents

1	Terms and methodology	3
	Expressing concerns with 'shades of green'	3
2	Brief description of ADIF-Alta Velocidad's green finance framework and related policies	4
	Environmental Strategies and Policies.....	4
	Use of proceeds.....	5
	Selection:.....	5
	Management of proceeds	5
	Reporting	6
3	Assessment of ADIF-Alta Velocidad's green finance framework and policies	7
	Overall shading.....	7
	Eligible projects under the ADIF-Alta Velocidad's green finance framework	7
	Background	8
	Governance Assessment.....	8
	Strengths	9
	Weaknesses	9
	Pitfalls.....	9
	Appendix 1: Referenced Documents List	11
	Appendix 2: About CICERO Shades of Green	12



1 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's updated framework dated October, 2019. 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:

CICERO Shades of Green



Dark green is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Ideally, exposure to transitional and physical climate risk is considered or mitigated.



Medium green is allocated to projects and solutions that represent steps towards the long-term vision, but are not quite there yet. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Physical and transition climate risks might be considered.



Light green is allocated to projects and solutions that are climate friendly but do not represent or contribute to the long-term vision. These represent necessary and potentially significant short-term GHG emission reductions, but need to be managed to avoid extension of equipment lifetime that can lock-in fossil fuel elements. Projects may be exposed to the physical and transitional climate risk without appropriate strategies in place to protect them.



Brown is allocated to projects and solutions that are in opposition to the long-term vision of a low carbon and climate resilient future.

Examples



Wind energy projects with a strong governance structure that integrates environmental concerns



Bridging technologies such as plug-in hybrid buses



Efficiency investments for fossil fuel technologies where clean alternatives are not available



New infrastructure for coal

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, the governance aspects are carefully considered and reflected in the overall shading of the green finance framework. CICERO Green considers four factors in its review of the client's governance processes: 1) the policies and goals of relevance to the green finance 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.



2 Brief description of ADIF-Alta Velocidad's green finance framework and related policies

ADIF-Alta Velocidad is a state-owned public corporate, operating under the supervision of the Ministry of Public Works of the Spanish Government. It was created in 2013 after the split of ADIF (Administrador de Infraestructuras Ferroviarias) into two separate entities: ADIF and ADIF-Alta Velocidad. ADIF-Alta Velocidad is responsible for the construction and management of Spain's high speed rail network, as well as other activities such as management of the high-speed stations and the supply of energy. The company has over 2500 km of high speed lines in operation and over 58 million train km traveled (data as of December 31, 2018), ranking Spain as the number one country in Europe and the second in the world (after China) in the number of high-speed train lines in operations.

ADIF-Alta Velocidad has issued three green bonds under the previous green bond framework. In April 2019, 600 million euros were raised to finance or refinance projects. 99.78% of proceeds of the previous bond in 2018 were allocated to the construction of new high speed lines that are to save 556 820 tons of CO₂ annually according to the issuer. This SPO update considers the changes from a green bond framework to a green finance framework in addition to governance assessment. At this stage, ADIF-Alta Velocidad does not account for emissions related to the construction of new railways but the possibility for doing so in the future is being considered.

Environmental Strategies and Policies

ADIF-Alta Velocidad has a concrete sustainability goal, contained in their Master Plan for Energy Savings and Efficiency 2014-2020, of reducing their energy consumption by 106.81 GWh(eq) per year by 2020, relative to energy use in 2008. According to the issuer, the estimates for the end of 2019 show an annual energy consumption reduction of 88 GWh(eq), which likely falls short to the 2020 reduction goal. A Plan to Combat Climate Change 2018-2030 is currently being developed, which will include greenhouse gas emissions (GHG) and energy consumption reduction goals for 2020, 2025 and 2030 and will be publicly available on the issuer's website. The plan includes an initiative for the implementation of TCFD recommendations, which is currently revised by the risk managements department. According to this plan, ADIF-Alta Velocidad aims to reduce its carbon footprint by 25 percent by 2030. The issuer estimates emission reductions of the transport sector until 2030 by a total of 8 MtCO_{2e} through increased modal share of railway, a total of 1.5 MtCO_{2e} from rail system improvements and 7.7 MtCO_{2e} through increased utilization of renewable energy.

ADIF-Alta Velocidad's direct and indirect CO₂ emissions (Scope 1 and 2) totaled at 38.6ktCO_{2e}, representing a decrease of 9.1% compared to 2017 and an increase of 4.6% compared to 2016. The source of emissions are 90% through indirect primary energy consumption through electricity. Indirect consumption of primary energy mainly through electricity was based on fossil fuels (945TJ) and on renewable resources (329TJ). The share of renewable resources in ADIF-Alta Velocidad's indirect energy consumption remained constant since 2016, representing 35%. In an effort to increase the share of renewable energy sources, the issuer is acquiring all of its electricity based on certificates of guarantee of origin. The remaining 10% represent direct emissions, out of which 45.6% are caused by maintenance activities and 51.9% by combustion installations. Combustion installations mainly refer to air conditioning equipment in train stations and work centers. These are mainly boilers that use fossil fuels, such as diesel or natural gas. In 2018, ADIF-Alta Velocidad's final energy consumption in own activities totaled at 571TJ



of electrical power constituting 94% of its total, 27TJ of diesel and 36TJ of natural gas. Higher maintenance operations required for high-speed railways have increased the diesel consumption by more than 80% compared to 2016. In their pursuit of an overarching goal to reduce their environmental impacts, the company aims to: use more efficient technology, implement mechanisms to control and reduce energy consumption, make the most of bioclimatic solutions and principles to obtain energy and provide lighting and heating, increasing their use of renewable energy, and greater stakeholder involvement among others.

ADIF-Alta Velocidad environmental policy includes Scope 3 emissions reductions and includes requirements of compliance with environmental aspects in their contracting process, either through the specifications of conditions of the tender or as contractual clauses. The department of environmental management proposes environmental clauses to the purchasing directorate, which depend on a variety of factors such as the demands of society, the market trends, or the environmental impact of activities or services related to acquisitions.

Use of proceeds

The updated green financing framework specifies two types of eligible green projects: investments related to new rail lines and rail line extensions (1) and investments related to maintenance, upgrades and energy efficiency of the rail system (2). These types of projects fall under the clean transportation category. Eligible green projects include new and ongoing projects with disbursements up to two years prior to the notes issuance and up to 24 months since launching date. ADIF-Alta

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.

Projects must fall under one of the two projects types above, to be selected. The Treasury and Accounting Department, in coordination with the Financial Planning and Budget Department and the Environmental Management Department, will review the allocation of the projects annually. Projects included in the two project types above are considered eligible for green financing proceeds allocation after the members of the evaluation committee have reached consensus. ADIF-Alta Velocidad delegates the activities of the Treasury and Accounting Department, and the Financial Planning and Budget Department to ADIF.

The allocation of proceeds under this framework is prioritized for projects with the highest environmental benefits. According to the issuer, projects which may create environmental damage are excluded in the selection process. Allocation of funds will be verified by an appointed third party.

Management of proceeds

CICERO Green finds the management of proceeds of ADIF-Alta Velocidad to be in accordance with the Green Bond and Loan Principles. The accounting department will be responsible for tracking the green bond proceeds and the tracking shall be audited by an external auditor party. Until the total allocation of an amount equal to the net proceeds from the sales of the Notes to Eligible Green Projects, ADIF-Alta Velocidad will temporarily invest an amount equal to the unallocated net proceeds from the sales of the notes in monetary funds managed following a responsible investment approach, in bank entities such as deposits or equivalents. The amount of potentially unallocated proceeds will be disclosed in the annual green bond report. According to the issuer, proceeds will not be allocated to operations. Funds under this framework will not be transferred in a separate account but carefully tracked by the accounting and treasury departments.



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.

ADIF-Alta Velocidad will publish annually a green bond report, under the responsibility of the treasury and accounting departments with assistance from the department for environment and projects. The report will include the following: annual updates on the amounts allocated to eligible green projects; annual report from auditors or other third party appointed by the issuer and expected and (where feasible) actual impact metrics related to eligible green projects. Examples of relevant metrics the issuer will report on are the following: for investments related to new lines and rail line extensions, the report will include impact metrics, such as estimated average time saving in minutes, number of passengers per km. and/or GHG emissions avoided (tons CO₂eq) and savings in external costs (EUR). The issuer aims to report on individual projects. For investments related to maintenance, upgrades and energy efficiency of the ADIF-Alta Velocidad rail system, the report will include impact metrics, such as the following: Achievement of objectives of the ADIF-Alta Velocidad Master Plan for Energy Savings and Efficiency 2014-2020, measured in percentage; reduction of energy consumption (GWh equivalents) and reduction of CO₂ emissions (kton. CO₂).

ADIF-Alta Velocidad will appoint a third party to verify the allocation of funds and the internal tracking method. The green finance report will be published on the issuer's website (<http://www.adifaltavelocidad.es>) within one year of the issuance and the annual reporting will continue until full allocation of the amount equal to the net proceeds.

Regarding green loans, ADIF-Alta Velocidad will issue a report with a similar scope to the green bond report which will be provided to the lenders, given the bilateral nature of the contract in this kind of financial instrument. This report will be provided to the lender and if it is considered to be of interest to third parties, this information may be made public.



3 Assessment of ADIF-Alta Velocidad’s green finance framework and policies

The framework and procedures for ADIF-Alta Velocidad’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 ADIF-Alta Velocidad 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 ADIF-Alta Velocidad’s green finance framework, we rate the framework **CICERO Dark Green**.

Eligible projects under the ADIF-Alta Velocidad’s green finance 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 financing aims to provide investors with certainty that their investments deliver environmental returns as well as financial returns. The Green Bond 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 	<ul style="list-style-type: none"> • New lines and rail line extensions • Maintenance, upgrades and energy efficiency of the rail system 	Dark Green <ul style="list-style-type: none"> ✓ High speed rail lines are designed to be used by electric trains. The issuer informed us that there is no intention of using them for exploitation that does not use electrical energy for its traction. ✓ New lines and rail line extensions include projects for the construction of high speed lines that are already being executed or are expected to be executed, as well as the lines already put into service. ✓ Be aware of potential lock-in effects through construction of railway stations and technical buildings related to the new railways, that follow no further requirements beyond regulations. ✓ Maintenance, upgrades and energy efficiency of the rail system include projects aimed at improving the efficiency of the rail system and promoting sustainable transport. Projects can be



-
- related to infrastructure and superstructure, such as signaling system.
 - ✓ Maintenance activities are associated with emissions (4,5% of total annual emissions of ADIF-Alta Velocidad). No new fossil fueled machinery or vehicles are eligible under this framework.
 - ✓ Consider landscape/biodiversity issues.
-

Table 1. Eligible project categories

Background

Transportation is responsible for 24% of direct CO₂ emissions from fuel combustion. Road vehicles – cars, trucks, buses and two- and three-wheelers – account for nearly three-quarters of transport CO₂ emissions. Global transport emissions grew by only 0.6% in 2018 (compared to 1.7% annually over the past decade) as efficiency improvements, electrification and biofuels helped limit the growth in energy demand. To be on track for the 2°C target, direct transport emissions must peak in the early 2020s and then fall by 13.9% until 2030¹. The largest amount of carbon savings comes from switching from inefficient modes of transport (e.g. private cars) to mass transit.² While electric modes of transportation are preferable to those that directly use fossil fuels, we should nevertheless be aware of the indirect GHG emissions stemming from the production and use and strive to keep increasing their efficiency. According to the IEA, \$15.7 trillion in additional transport investment will be necessary over the course of the next couple decades if we are to stay under the 2°C target. As such, further investment into rail transport is likely to encourage a shift from other means of transportation that currently contribute more to global warming.

Electric transportation such as high speed rail is only as clean as the energy production methods it uses. According to the IEA³, 16% of Spain's energy consumption is renewable, and the national target is to continue increasing the share of renewable energy consumption to 20% by 2020⁴.

Purchasing certificates of origin for renewable energy does not necessarily imply direct investments in renewable energy. There is no guarantee that purchases of renewable energy certificates result in more overall investments in renewable energy in the Spanish context. ADIF-Alta Velocidad purchases renewable energy certificates in an effort to increase the share of renewable energy sources and to reduce their emissions related to energy consumption.

Governance Assessment

Four aspects are studied when assessing the ADIF-Alta Velocidad's governance procedures: 1) the policies and goals of relevance to the green finance 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.

¹ <https://www.iea.org/weo2018/scenarios/>

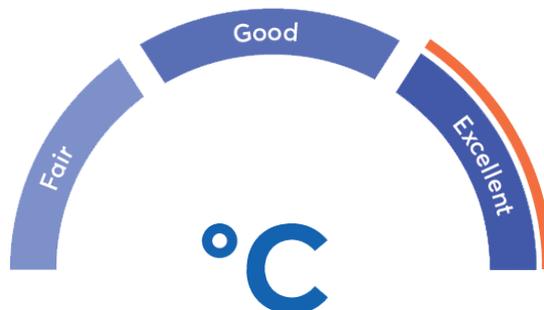
² https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter8.pdf

³ <https://www.iea.org/countries/spain/>

⁴ <http://ec.europa.eu/eurostat/documents/2995521/7905983/8-14032017-BP-EN.pdf/af8b4671-fb2a-477b-b7cf-d9a28cb8beea>



ADIF-Alta Velocidad has in place a sound management and governance structure, as well as regular and transparent reporting about green bond project achievements to investors and the public. The issuer also has in place environmental goals and targets, such as integration of renewable energy sources and reductions in energy consumption. Furthermore, the issuer is in the process of implementing TCFD recommendations as part of their Plan to Combat Climate Change 2018-2030. The selection process involves consensus decision-making and appropriate environmental competence. ADIF-Alta Velocidad is transparent with their methodology and commit to report on a good selection of impact metrics. The overall assessment of ADIF-Alta Velocidad's governance structure and processes gives it a rating of **Excellent**.



Strengths

Transportation is among the most important sources of greenhouse gas (GHG) emissions worldwide⁵ and fast rail transport, which is entirely electric, is amongst the most environmentally friendly means of transportation, especially when compared to alternatives such as air and road transport. ADIF-Alta Velocidad has published figures showing that in terms of energy consumption, travelling by rail required less than a fifth of the energy than travelling by road or air. This translates into emissions of about one fifteenth of the GHG that would have been emitted by road or air travel. In this regard, further investment into the rail network of ADIF-Alta Velocidad will contribute to the climate change mitigation targets set by the Spanish government. CICERO Green considers the narrow focus on investments in high-speed electric railways to be a strength.

ADIF-Alta Velocidad benefits from good environmental competence and awareness and has in place sound goals and commitments. Additionally, we consider that ADIF-Alta Velocidad has demonstrated a commitment to work on increasing their sustainability in some cases by going beyond simply complying with the minimum standards set by national legislation and by integrating a strong emphasis on environmental aspects, including climate impacts, into their company's profile and activities. For example, ADIF-Alta Velocidad has certified their compliance with the voluntary ISO 14001 standard which requires organizations to consider environmental issues relevant to their operations including air pollution, water and sewage management, climate change mitigation and adaptation, and soil contamination, among others. They have also developed a specific energy efficiency six-year plan ("Master Plan for Energy Savings and Efficiency 2014-2020") that explicitly states a quantitative energy reduction target and a Plan to Combat Climate Change 2018-2030.

Weaknesses

We find no substantial weaknesses in ADIF-Alta Velocidad's Green Financing Framework.

Pitfalls

ADIF-Alta Velocidad reports on total emissions and intensity emissions from own activities. However, emissions from construction and maintenance of new rail lines are not included in these calculations. We also consider that the project type: "New rail lines and rail lines extensions" is quite broad. ADIF-Alta Velocidad has informed us that this includes the required stations, technical buildings and other installations required to support the expansion of the rail network, but does not include procuring new trains. Given that investments in this kind of infrastructure

⁵ https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter8.pdf



are long-term, it is important to be aware of potential lock in effects. However, we consider this risk to be small, given that since December 2018 all the projects of stations and buildings need to comply with the Technical Building Code (CTE) which establishes the minimum requirements to be met in terms of energy efficiency, “nearly zero-energy” is to be implemented. In addition, ADIF-Alta Velocidad informed us that up to now no proceeds from green bonds have been allocated to building stations or any other facilities. We encourage the issuer to consider going beyond compliance with the relevant legislation and make additional efforts to keep increasing energy efficiency when constructing new infrastructure, by following a holistic approach that enables them to further contribute towards a low carbon and climate resilient future.

Adaptation and resilience to climate change is vital to transportation networks. CICERO Green encourages the issuer to screen for resilience and to consider scenario stress testing in their resilience assessments. The framework would benefit from climate resilience assessments especially for new railway projects and more rigorous climate considerations for railway stations and associated technical buildings.



Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	ADIF-Alta Velocidad's Green Finance Framework	This document comprises ADIF-Alta Velocidad's Green Finance Framework and how it intends to use proceeds, how it plans to evaluate and select eligible projects, manages the proceeds and reports to investors.
2	Sustainability Report 2017	This document outlines ADIF-Alta Velocidad's ambitions and goals for the near and long term.
3	Green Bonds Annual Report 2017	The report outlines procedures and impact metrics of the projects funded under the previous green bonds framework of ADIF-Alta Velocidad for 2017.
4	Green Bonds Annual Report 2018	The report outlines procedures and impact metrics of the projects funded under the previous green bonds framework of ADIF-Alta Velocidad for 2017.
5	Corporate governance annual report 2018	This report elaborates on the nature and legal regime of the entity, indicating the applicable regulatory framework, the issuer's ownership and control structure.
6	Audit report on annual accounts 2018	This report states the true and fair view of the net equity and the financial situation as of at 31 December 2018 of ADIF Alta Velocidad, and of the results of its operations and its cash flows for the year ended on that date, in accordance with the applicable framework of financial reporting standards.



Appendix 2: 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 and the International Institute for Sustainable Development (IISD).

