



cardano

**Sustainable
Investment Policy**
Appendix A:
**Cardano Sustainable
Investment Framework**

December 2023

Preface

Cardano delivers investment solutions to its clients with the objective to optimise longer-term financial, environmental and social returns. To guide these investment solutions, Cardano has developed a Sustainable Investment Framework. This framework is outlined in Cardano's Sustainable Investment Policy. The policy document describes the basics of the framework. The current document is appendix A of the Sustainable Investment Policy, describing in detail how companies, institutions and sovereigns are classified in our Sustainable Investment Framework.

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1.

Introduction



This document is an appendix to Cardano’s Sustainable Investment Policy. It describes in detail Cardano’s Sustainable Investment Framework for investments in companies, institutions and sovereigns – referred to as entities – and the steps taken to classify them. It also describes for our directly managed assets the consequences if an entity receives a certain status.¹

The aim of Cardano’s Sustainability Policy is to encourage entities to contribute to the transition towards a sustainable society. As described in the Cardano Sustainable Investment Policy, all entities are classified according to our Sustainable Investment Framework (see figure A1).

To identify entities that are making the transition towards a sustainable way of operating, entities are evaluated in two steps.²

In step 1, the question is raised whether the behaviour and the activities of the entities fit within a sustainable society: Do the entities violate international standards or are they involved in activities that are considered too harmful for society? If entities do not comply with the standards defined in this step, they are classified as ‘non-compliant with international standards’ or ‘harmful’ and are excluded from investment.

In step 2, entities that pass the first step, are classified based on their ability and likelihood to adapt or contribute to the transition to a sustainable society – through reducing negatives or accelerating positives – or whether they are unlikely to adapt and therefore represent unacceptable risk to our portfolios or create too much negative real-world impact. Based on a detailed assessment, entities are classified as ‘non-adapting’, ‘at-risk’, ‘adapting’, ‘sustainable’ or ‘positive impact’ – see section 3 for a detailed discussion of the categories.³

The assigned classification determines in which investment solution the entity may fit. This document describes how both steps are implemented.

Figure A1: Cardano’s Sustainable Investment Framework



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The aim of Cardano’s Sustainability Policy is to encourage entities to contribute to the transition towards a sustainable society.

1 This policy applies to all of Cardano’s internally-managed investments and mandates. While evaluating, selecting and engaging external managers based on ESG criteria, Cardano is to a certain extent unable to impose its own ESG criteria on third-party funds where assets are pooled with other investors whose criteria are different from Cardano’s. Thus, this policy cannot be strictly applied to externally-managed funds.
 2 With respect to their procurement, Cardano expects entities which are invested in to adhere to the criteria set out in this policy paper. It is also expected entities to use these criteria in their contracts with subcontractors and suppliers.
 3 Note that sovereigns that pass step 1 are classified as ‘adapting’. Green, social or sustainable sovereign bonds are in principle classified as ‘positive impact’. So far, sovereigns are not classified as ‘sustainable’ or ‘at-risk’ in the Sustainable Investment Framework.

Linking the categories to the EU Sustainable Finance Disclosure Regulation

Thresholds applied in the Sustainable Investment Framework have been defined such that the classification is aligned with the definitions of the EU Sustainable Finance Disclosure Regulation (SFDR).

All Cardano's investment funds are classified as so-called Article 8 or Article 9 financial products under the SFDR. In order to classify as either of these two products, the companies in which investments are made need to follow good governance practices, in particular with respect to sound management structures, employee relations, remuneration of staff and tax compliance. Cardano's criteria for 'good governance' refer to the international standards assessed as part of step 1 of the Sustainable Investment Framework, which includes the international norms as laid down in the UN Guiding Principles on Business and Human Rights and the OECD Guidelines for Multinational Enterprises (see section 2.2.1), and to the screening on organisational behaviour and integrity as part of step 2 of the Sustainable Investment Framework (see section 3.9). Cardano's policy is that investee companies are considered to follow good governance practices if they are assessed to 'comply with the international standards' of step 1 and are classified as 'adapting', 'sustainable' or 'positive impact' under step 2 of the Sustainable Investment Framework.

According to the SFDR, a sustainable investment is an investment in an economic activity that contributes to a sustainability objective, provided that such investment does not cause significant harm to any of the sustainability targets (DNSH) and that the investee company follows good governance practices. Thresholds have been defined such that entities that are classified as 'sustainable' or 'positive impact' comply with this definition. The strict thresholds on a broad range of sustainability indicators (including the Principal Adverse Impact indicators as given by the SFDR), Sustainable Development Goal (SDG) alignment and controversies in the assessment show they comply with the DNSH requirements. The additional requirements on positive SDG alignment and sustainable impact revenues provide evidence that they also contribute to at least one of the Cardano sustainability targets.

Throughout this document, we present how the indicators reflecting the Principal Adverse Impacts of investment decisions on sustainability factors are integrated in the Sustainable Investment Framework.



2.

Step 1: Does entity behaviour fit in a sustainable society?



2.1. Introduction

As a first step, we evaluate the compliance with international standards and the harm entities may cause to humans, society or the environment based on a list of principles that are seen as fundamental to sustainable investments. Principles for sovereigns differ from those for companies and institutions. Companies and institutions are expected to comply with principles derived from international standards and principles considering the harm their activities or behaviour can do to humans, society or the environment. Sovereigns are expected to comply with principles related to good governance, to decent living and working circumstances, and to environmental risks.

In this document, section 2.2 discusses how we evaluate compliance with the principles for listed equity and bonds issued by corporates. Section 2.3 discusses how sovereign and sub-sovereign bond issuers are evaluated.

Table A1: Evaluation principles for companies

Non-compliant with international standards	Harmful
<ul style="list-style-type: none"> ● Compliance with basic human rights ● Compliance with basic labour rights ● No involvement in controversial weapons or provision of military equipment to military regimes ● Compliance with international sanctions ● No systematic involvement in fraud, corruption and tax evasion ● No systematic involvement in severe environmental damage ● Clear phase-out plans for thermal coal activities 	<ul style="list-style-type: none"> ● No involvement in the sale of civilian firearms or production of conventional weapons ● No significant involvement in products or businesses doing harm to physical or mental health, such as tobacco, gambling and adult entertainment ● No involvement in activities with significant risk of harmful impacts to animal welfare

Through these minimum standards, we only invest in entities that apply good governance practices as set out in the EU Sustainable Finance Disclosure Regulation. Non-compliance to these treaties and guidelines is considered unacceptable and in conflict with basic principles of (corporate) social responsibility. Next to being ethically unjust and socially or environmentally unacceptable, non-compliance with these principles presents reputational and therefore financial risk to the relevant companies and their investors.

2.2. Does company behaviour fit in a sustainable society?

We have formulated two sets of minimum ethical, social and environmental standards we see as essential for good citizenship and good corporate governance – see table A1.

The first focusses on principles related to internationally recognized norms and standards. These are based on a broad range of international treaties, conventions and best practice guidelines, including the UN Global Compact, the UN Guiding Principles on Business & Human Rights and the OECD Guidelines for Multinational Enterprises (see the appendix for a comprehensive list of the international mechanisms consulted). We consider these international guidelines as universally applicable.

The second focusses on principles related to activities that may cause significant harm to society.

2.2.1. Principles related to international standards

Compliance with basic human rights

The UN Guiding Principles on Business and Human Rights, endorsed unanimously by the UN Human Rights Council in June 2011, underline the corporate responsibility to respect human rights. This responsibility, also affirmed in Principles 1 and 2 of the UN Global Compact and the OECD Guidelines for Multinational Enterprises, requires companies to avoid causing or contributing to adverse human rights impacts through their own activities, and to prevent, mitigate or remedy human rights impacts directly linked to their operations, products or services.

The responsibility of companies to respect human rights refers, as a minimum, to the core internationally recognised human rights, contained in the International Bill of Rights. Depending on the circumstances, companies may need to consider additional universal human rights standards, for instance related to protecting human rights of specific groups, such as indigenous peoples, women, persons with disabilities, and migrant workers and their families.

We evaluate whether companies comply with the above mentioned international human rights mechanisms.⁴

Compliance with basic labour rights

“Fundamental labour rights include the effective abolition of child labour and the elimination of all forms of forced labour, as well as the freedom of association, the effective recognition of the right to collective bargaining and the elimination of all forms of discrimination in respect to employment”.⁵ We evaluate whether companies and their key suppliers comply with international norms on labour right issues.

● Child labour

- Minimum Age Convention, 1973 (ILO Convention No. 138)
- Convention on the Rights of the Child, 1989
- Worst Forms of Child Labour Convention, 1999 (ILO Convention No. 182)
- Principle 5 of the UN Global Compact.

● Forced labour

- Slavery Convention, 1926
- Forced Labour Convention, 1930 (ILO Convention No.29)
- Supplementary Convention on the Abolition of Slavery, the Slave Trade, and Institutions and Practices Similar to Slavery, 1956
- Abolition of Forced Labour Convention, 1957 (ILO Convention No. 105)
- Principle 4 of the UN Global Compact.

● Employee Rights

- ILO Declaration on Fundamental Principles and Rights at Work and its Follow-Up (1988, Annex revised 15 Jun 2010)
- Freedom of Association and Protection of the Right to Organise Convention, 1948 (ILO Convention No. 87)
- Right to Organise and Collective Bargaining Convention, 1949 (ILO Convention No. 98)
- Equal Remuneration Convention, 1951 (ILO Convention No. 100)

- Discrimination (Employment and Occupation) Convention, 1958 (ILO Convention No.111)
- Minimum Wage Fixing Convention, 1970 (ILO Convention No. 131)
- Hours of Work Convention, 1930 (ILO Convention No. 30)
- Convention Concerning Occupational Safety and Health and the Working Environment, 1983 (ILO Convention No. 155)
- Principles 3 and 6 of the UN Global Compact.

The labour right Principle also addresses the right to just and favourable conditions of work as defined in Article 23 of the Universal Declaration on Human Rights, and Article 7 of the International Covenant on Economic, Social and Cultural Rights. These include the right to fair wages and equal remuneration, to safe and healthy working conditions, to equal opportunities, and to rest, leisure, reasonable limitation of working hours and periodic holidays with pay. Furthermore are included the risk of forced labour, in particular ‘human trafficking’, whereby workers are trapped in work that they are unable to leave voluntarily, live in very miserable conditions, work extremely long days and receive no or low wages.

No involvement in controversial weapons and provision of military equipment to military regimes

We do not invest in companies involved in the production, development, sale, or distribution of controversial weapons or related services or components that are essential or specialised. Moreover, we do not invest in companies holding a stake (and/or voting powers) of 10 percent or more in another company that is involved in controversial weapons activities as referred to earlier. Essential components or services are crucial for the functioning of the weapon, such as sub-munitions, fuses, guidance mechanisms, and warheads. Specialised components or services are those that are specifically developed and provided for the controversial weapon and thus are not considered dual-use.

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We do not invest in companies involved in the production, development, sale, or distribution of controversial weapons.

⁴ Note that the topics considered here include the mandatory Principal Adverse Indicators set out in the SFDR related to compliance to and violations of UN Global Compact and the OECD Guidelines for Multinational Enterprises.

⁵ ILO Declaration on Fundamental Principles and Rights at Work, 1998.

We consider weapons controversial if they are forbidden under international law and banned by international conventions or treaties, or if they violate fundamental humanitarian principles when they are used. This includes the principle of proportionality, such that unnecessary suffering is prevented and that military and civilian targets are distinguished from one another.

More specific, we consider the following weapons to be controversial:⁶

- Anti-personnel mines: as defined by the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, 1997
- Biological weapons: as defined by the Convention on the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, 1972
- Chemical weapons: as defined by the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, 1993
- Cluster weapons: as defined by the Convention on Cluster Munitions, 2008
- Nuclear weapons
- Conventional weapons equipped with white phosphorus or depleted uranium.

In addition, we consider the following international conventions when applying the principle on weapons:

- Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, 1925
- Treaty on the Non-Proliferation of Nuclear Weapons, 1968
- Article 36 of Protocol I Additional to the 1949 Geneva Conventions, 1977
- Comprehensive Nuclear-Test-Ban Treaty, 1996
- Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, 2001.

We further exclude investments in companies that are involved in the trade and provision of conventional weapons, arms and weapon systems, military transport systems, other military goods and related services with countries and non-state actors subject to United Nations Security Council and/or the Council of the European Union arms embargoes. This includes provision of military equipment to regimes and to countries deemed to be weak states or oppressive regimes,⁷ where there is a substantial risk that the weapons may be used to carry out illegal acts of violence against civilians, genocide, crimes against humanity or gross violations of human rights. This also includes the provision of military equipment to parties involved in conflict, unless to parties acting in accordance with a UN Security Council resolution, and to parties that spend a disproportionate part of their budget on military expenses.⁸ If companies are exporting to these regimes, they are breaching principles of military necessity, discrimination and unnecessary suffering and proportionality. They will therefore be excluded by Cardano, regardless of the amount of revenues being generated from conventional weapons.

We also exclude investments in companies providing Lethal Autonomous Weapons Systems (LAWS). These weapon systems use artificial intelligence to identify, select and kill targets without human intervention (e.g. killer robots). They differ from unmanned military vehicles in the sense that the decision to kill is solely made by algorithms and not remotely by a human operator. Human Rights Watch has expressed concerns about such weapons violating the principles of distinction and proportionality as set out in international law. The weapons pose severe risks as the weapons lack human judgment and lower barriers to conflict, with a risk of rapid conflict escalation.

Compliance with international sanctions

We exclude companies for which sanctions have been ordained by international organisations acting within the rule of law, such as United Nations (UN), the European Union (EU) and the United Kingdom (UK). Sanctions are compelling tools used in response to violations of international law or human rights. It specifically includes the following list of EU-sanctions:

- Annex to EU regulation No 269/2014
- Annex to EU regulation No 512/2014/CFSP
- Annex to EU regulation No 833/2014.

No systematic involvement in fraud, corruption and tax evasion

We do not invest in companies that are systematically involved in fraud, corruption or tax evasion. This includes bribery, extortion, fraud, collusion, money laundering,

6 Note that the topics considered here include the mandatory Principal Adverse Indicators set out in the SFDR related to exposure to controversial weapons.

7 We consider the following indicators when identifying weak states and oppressive regimes: corruption, government effectiveness, human development, presence of non-state actor, rule of law, state legitimacy, social inequality, political and press freedom, public expenditure on healthcare and education and disproportionately high expenditure on military.

8 We do our best to find information to identify companies that are involved in weapons trade that do not comply with our policies. Whenever new information comes available, this will be included in the screening procedures.

embezzlement, illegal political contributions, nepotism and certain facilitation payments. Also conscious withholding, falsifying or twisting information of essential importance to consumers, business relations, shareholders, employees, or other stakeholders are seen as a violation of international standards. We also see involvement in corruption, as defined by the following mechanisms, to be a violation of international norms:

- OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, 1997
- Principle 10 of the UN Global Compact
- UN Convention Against Corruption, 2003
- OECD Guidelines for Multinational Enterprises, 2011.

No systematic involvement in severe environmental damage

We do not wish for involvement in activities that cause serious environmental damage through toxic emissions, hazardous waste, irresponsible waste management, biodiversity loss or the depletion of natural resources. We exclude companies that systematically violate national and international environmental laws and regulations. This includes illegal trade of wild and endangered species, illegal environmental pollution and toxic spills. It also includes environmental damage, such as illegal logging and illegal extraction of natural resources, (mining) activities in protected areas, riverine tailings disposal, irresponsible waste management or mountain top removal. These are systematic and deliberate activities causing preventable environmental degradation with severe consequences for mankind, nature and society.⁹

We seek guidance from the following international environmental conventions, declarations and best practices, as well as environmental laws and regulations, when determining whether a company is in violation with international standards:

- Ramsar Convention on Wetlands, 1971
- UNESCO World Heritage Convention, 1972
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1975
- Convention on the Conservation of Migratory Species of Wild Animals, 1979

- Rio Declaration on Environment and Development, 1992
- The Earth Charter, 2000
- Principle 7 of the UN Global Compact, 2000
- International Union for the Conservation of Nature (IUCN) Protected Areas Categories I through IV, 2008
- IFC Performance Standards on Social & Environmental Responsibility, 2012
- The Paris Climate Agreement (UNFCCC), 2015.

2.2.2. Principles related to activities with significant harm to society

No involvement in the sale of civilian firearms or production of conventional weapons.

We do not invest in companies earning more than 10 percent of their revenues from conventional weapons, ammunition and related weapon systems production. Support activities, such as combat training, repair services, or the provision of communication systems, will not be excluded since they have no direct lethal effects and could potentially contribute to the safe usage of conventional weapons for defensive purposes. We also exclude investments in producers of non-military firearms and in sale of (hand)guns to consumers.

No involvement in products or businesses doing harm to physical and mental health

We consider products or businesses harmful to human physical and mental health welfare a violation of good product and business integrity. This includes:

- Companies with a turnover of more than 5 percent in the production of tobacco, including cigarettes, cigars and e-cigarettes.
- Companies with a turnover of more than 5 percent in adult entertainment.
- Companies with a turnover of more than 5 percent from offering, exploiting, producing, licensing or supporting gambling, lottery and competitive games or from manufacturing and selling the relevant equipment.
- Companies with a turnover of more than 10 percent from the supply, retail and distribution of tobacco.

⁹ As an evolving investment industry norm, we also exclude companies with no clear plan to phase out their thermal coal activities by 2030, according to the pathway as specified in our Climate Strategy, due to their severe environmental impact and the proliferation of viable alternatives. See also section 3.3.

Businesses or products that provide essential and/or specialized support for the above products and/or activities are also considered harmful if the below criteria are fulfilled:

- The service is essential in the continuation of the product and/or activities and directly relates to the core business of the company. Examples of essential services to be excluded under this definition are the provision of real estate, manpower, and payment- or marketing services.
- The revenues coming from the services to excluded companies are material if they exceed 10 percent of the total revenues of the service company.¹⁰

No involvement in activities with significant risk of harmful impacts to animal welfare

We consider that human interaction with animals should occur in a responsible and prudent manner. Should animal-friendly alternatives be available, these should always prevail. Involvement in animal abuses without proven actions to improve the living conditions of animals, is seen as a reason for exclusion. We also believe animal testing should not occur unless it is proven to be crucial for society, such as for medical testing, and if there is no alternative available or if it is required by law to test product safety on animals. Companies using animal testing or lab animals are expected to act in accordance with the REACH regulation or to apply the so-called 3R-strategy (Replace, Reduce, Refine).¹¹ We monitor the effort that companies make to find and validate non-animal alternatives. Companies that do not attempt this, are considered eligible for exclusion. We also expect organisations to be transparent about their animal testing methods and policy. As for animal welfare, companies are expected to act in accordance with the relevant international codes and agreements – see Appendix.

Section 3.8, on social capital management, provides more detail on how management of animal welfare is considered in due diligence procedures.

2.2.3. Implementation steps

To identify whether a company complies with the criteria described in sections 2.2.1 and 2.2.2, two questions are raised.

1. Is the company repeatedly or systematically involved in activities covered by the principles or does the company cause structural and systematic adverse impacts that relate to the principles, due to its activities, behaviour or products?

2. If the first question is answered affirmatively, is the company sufficiently prepared and able to prevent future negative impacts from occurring and to sufficiently remedy the impact? Or, if the company is involved in harmful products, is it able to formulate a phase-out strategy for these products? A company is considered to have taken sufficient measures when one or more of the following conditions is met:
 - a) The company has coherent management systems, including
 - Management principles;
 - An operational policy through which these principles are implemented;
 - Adequate procedures to assess, mitigate and address risks;
 - Systems for monitoring and tracking risks and risk management steps, as well as implementation of the operational policy;
 - Sufficient training and education to help staff, subcontractors and suppliers in the adequate implementation and execution of the policies;
 - Mechanisms to encourage frequent feedback to management; and
 - Regular (public) reporting.¹²
 - b) The company demonstrates credible implementation and/or enforcement of above-mentioned management systems.

“We consider that human interaction with animals should occur in a responsible and prudent manner.”

¹⁰ We do our best to find available information to identify companies that are providing essential and/or specialized support to businesses doing harm to human health and animal welfare. Whenever new information comes available, this will be included in the screening procedures.

¹¹ See for instance http://ec.europa.eu/environment/chemicals/lab_animals/3r/alternative_en.htm. The R3-strategy calls upon companies to consider how to 1) substitute animal testing with animal friendly alternatives, 2) reduce the number of lab animals per experiment and 3) improve animal testing in order to prevent and reduce pain and discomfort in lab animals.

¹² We expect companies to report adequately on sustainability issues, for example through a sustainability and / or annual report based on the GRI G4 Sustainability Reporting Guidelines and any sector-specific modules, if applicable.

Investee companies that do not comply with the principles, enter a three-month investigative period during which it is systematically assessed. This includes an assessment of the severity, nature and/or number of its controversies as well as the actions it takes to remedy the situation and prevent further violations from occurring.¹³ If systematic and large-scale non-compliance to any of the criteria proves that company is incapable of preventing non-compliance from occurring in the future, the company is classified as ‘non-compliant with international standards’ or ‘harmful’ and therefore excluded from Cardano’s directly managed assets. If we are invested in this company, the assets will be sold within 30 business days, unless Cardano, acting in the interest of the participants, considers a longer period appropriate. This approach ensures we only exclude companies once it becomes clear that there is no ability to persuade or encourage them to change their behaviour.

If the company has not yet taken sufficient action to prevent future incidents and engagement with the company is expected to result in the necessary behavioural improvements, we may start an engagement. Objectives are formulated and regularly monitored. If after a two-year engagement period the company has taken inappropriate action and remains involved in structural violations of the principles, the company may be classified as ‘non-compliant with international standards’ or ‘harmful’ and, therefore, excluded from the investment strategies.

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We consider compliance to fundamental rights, environmental standards and global governance norms to be fundamental to investments in (sub)-sovereigns.

If the investigations prove that the violations are of incidental nature and that the company takes sufficient actions to prevent comparable incidents from happening in the future, the company will be further investigated according to its ability and likelihood to contribute to the sustainability transition as discussed in section 3.

2.2.4. Subsidiaries and affiliates

When assessing subsidiaries and/or affiliates of a company, the following criteria are used to determine whether the subsidiary or affiliate should receive the same assessment as the parent company or receive a separate, individual judgement. A company and its subsidiaries or affiliates generally receive the same assessment if the two organisations do not have an independent listing. Furthermore, they generally receive the same assessment when the following criteria are fulfilled: a company owns more than 50 percent of the voting rights of the subsidiary,¹⁴ or has a largely comparable ownership or governance structure or policy. In all other cases, the company and their subsidiaries and/or affiliates receive an individual assessment.

2.3. Does sovereign behaviour fit in a sustainable society?

Sovereign bonds are an important asset class for Cardano, and thus an essential part of our Sustainable Investment Framework. Sovereign debt is traditionally considered to be low risk or even a risk-free asset class. But research increasingly concludes that governance factors significantly impact countries’ risks and opportunities. More recently, it is being recognized that also social and environmental indicators influence countries’ risks and opportunities and should as well be included in the valuation of sovereign debt.

We consider compliance to fundamental rights, environmental standards and global governance norms to be fundamental to investments in (sub)-sovereigns. Sovereigns that are repeatedly or systematically not complying to these standards are considered unethical or irresponsible investment options. They are therefore classified as ‘non-compliant with international standards’ in the Cardano Sustainable Investment Framework and excluded from all internally-managed investments and mandates.¹⁵ The principles used are shown in table A2. How these criteria can be interpreted and measured is discussed below.¹⁶

13 Research into the nature of the incident should determine whether the incident occurred despite sufficient precautions and efforts by the company, or whether the incident is a result of more structural deficiencies in how the company deals with environmental, social and governance issues. Advice regarding the viability of engagement is based on the governance and ownership structure of the company, any history of engagement and the company’s response to that, the regulatory and geographical context in which it operates, public responses of the company to the incident, and whether there is credible reason to believe that the company can change its conduct, products or services.

14 As indicated in Section 2.2.1, this percentage is lower for companies holding a stake in companies involved in controversial weapons production. We do not invest in companies holding a stake (and/or voting powers) of 10 percent or more in another company that is involved in controversial weapons production.

15 Sovereigns that comply with all the standards are classified as ‘adapting’ and therefore allowed in our internally managed strategies and mandates. Green, social or sustainable sovereign bonds are in principle classified as ‘positive impact’. So far, we do not classify sovereigns as ‘sustainable’ or ‘at-risk’ in our Sustainable Investment Framework.

16 Note that the topics considered here include the mandatory Principal Adverse Indicators set out in the SFDR related to sovereigns and supranationals on greenhouse gas emissions and social violations.

Table A2: Evaluation principles for sovereigns

Governance	Social	Environment
<p>Exhibit good governance, including compliance with political rights & civil liberties, no involvement in structural corruption, care for institutional strength.</p> <p>Compliance with international sanctions and no involvement in controversial arms trade.</p>	<p>Provision of decent circumstances for human and social capital, including compliance with fundamental human, social and labour rights.</p>	<p>Incorporation of the impacts of climate change, resource scarcity and other environmental risks into governmental decision making. That is, sovereigns are expected to take the risks, opportunities and impacts of climate change and resource scarcity into account in policy programs.</p>

2.3.1. Governance

Well-functioning governance structures and institutions are a necessary basis for economic stability and a decent standard of living. On the other hand, development is hampered by corruption, malfunctioning legal systems, lack of civil liberties, undemocratic procedures, low political stability with limited or no political rights, and non-existing opportunities for development or improvement of people’s lives. State regimes influence the freedom and security of the population and related level of peace, which should therefore be an integral part of the policies in a country. We expect that sovereigns respect the 1966 International Covenant on Civil and Political Rights, and the 1966 International Covenant on Economic, Social and Cultural Rights.

Good governance

To determine which sovereigns are characterised by good governance, each country is evaluated based on two indicators. First, the World Bank Worldwide Governance Indicators measure how sovereigns govern their country based on six governance indicators:

- Voice and accountability
- Political stability and absence of violence
- Government effectiveness
- Regulatory quality
- Rule of law
- Control of corruption.

The scores for each of the six indicators are combined into one comprehensive governance score for each country.

Second, financial and political governance of a country are also evaluated based on the sovereign governance scores from our main ESG data provider. These scores measure good governance through the long-term stability and performance of the political, judicial and financial systems.

This provides information about the financial management and the capacity of a government to address and manage environmental and social risk.

For both indicators, we consider the 20 percent countries with the lowest scores as the worst governed countries. They are considered unethical and irresponsible investments and will thus be classified as ‘non-compliant with international standards’.

Compliance with international sanctions and no involvement in controversial arms trade

In alignment with our position on controversial weapons for companies, we will not invest in sovereigns that are under United Nations Security Council or Council or the European Union arms embargoes. We also exclude sovereigns that are involved in the trade of conventional weapons, including the provision of related services, with countries and non-state actors subject to United Nations Security Council or the Council of the European Union arms embargoes. This includes provision of military equipment to regimes and to countries deemed to be weak states or oppressive regimes,¹⁷ and to countries where there is a substantial risk that the weapons may be used to carry out illegal acts of violence against civilians, genocide, crimes against humanity or gross violations of human rights, whether or not there is a substantial risk that the arms are intended for this purpose. Further, we do not invest in sovereigns that do not comply with UN, EU or UK sanctions against sovereigns or regimes.

2.3.2. Social

States are responsible for ensuring fundamental rights for their populations. We expect them to uphold and protect human rights, such as those enshrined in the 1948 Universal Declaration of Human Rights. In addition, we expect sovereigns to acknowledge the importance of human and social capital. Extreme poverty and a lack of education may

¹⁷ We consider the following indicators when identifying weak states and oppressive regimes: corruption, government effectiveness, human development, presence of non-state actor, rule of law, state legitimacy, social inequality, political and press freedom, and public expenditure on healthcare, education and military.

lead to social unrest and do not allow a country to function sustainably. Investing in a country which does not include social protection into its policies and programs should be prevented. To assess how well sovereigns do on these topics, we consider three indicators.

First, we consider how well sovereigns protect political rights and civil liberties. Freedom House's 'Freedom in the World' report, annually compares countries and labels them as "Not Free", "Partly Free" or "Free". We classify sovereigns that are deemed "Not Free" by Freedom House as 'non-compliant with international standards'. In case Freedom House indicates that a country is "Partly Free" or if there is a conflict area in the country which is labelled as "Not Free" or "Partly Free", the following rules are applied: if a disputed territory – within the borders of one country – is invaded, threatened, occupied and/or militarised by another country, then the first country is not necessarily excluded. The affected country does not have effective control over these areas. Countries that are considered "Free" or "Partly Free" are excluded from investment if it is obvious that such countries have effective control over the conflicted areas.

Second, a sovereign's capacity to develop and maintain a stable, healthy and productive workforce information is evaluated based on the sovereign social scores from our main ESG data provider. These show how countries safeguard basic human and knowledge capital, support (higher) education, technological readiness and create a supportive economic environment, and manage basic human needs, health and wellness. The 20 percent sovereigns with the lowest scores are considered to take insufficient steps in creating and enabling the right environment for their population and are classified as 'non-compliant with international standards'.

Finally, the support sovereigns provide to social and economic development of their population is measured through the Human Capital Index (HCI). This index captures the amount of human capital a child born today could expect to earn by the age of 18, given the risks to poor health and education which are present in the region the child is living in. Since human capital enables people to develop themselves as productive members of society, it is key to end extreme poverty, create more inclusive societies and reach future stability of societies and economies. The HCI measures to what extent (public) investments in nutrition, health care, quality education, jobs and skills, improve the status of human capital in a country. The 20 percent sovereigns with the lowest HCI scores are classified as 'non-compliant with international standards'.

2.3.3. Environment

Good governance principles also include proper governance of the environment and natural resources.

Lacking environmental and natural resources policies may lead to future economic downturn, loss of production opportunities, scarcity of natural resources and health problems. We expect sovereigns to properly manage their natural resources and protected areas, comply with international environmental agreements and targets, and prevent illegal activities severely damaging natural resources and the environment.

A sovereign's capacity to manage its environment and natural resources is evaluated based on the sovereign environmental scores from our main ESG data provider. These scores measure the ability of sovereigns to protect their natural resources and to manage environmental vulnerabilities and externalities. We focus on the data points related to energy security risk, natural resources management, water resources management, exposure to land degradation, presence of mineral resources and management and conservation of protected areas or areas of high conservation value. In addition, we consider information related to the vulnerability to physical impacts of climate change, environmental events and other environmental externalities. These data points are combined into one variable and the 20 percent sovereigns with the lowest score are classified as 'non-compliant with international standards'.

2.3.4. Sub-sovereign, Supranational and State-owned issuers

State-owned companies within excluded countries are not automatically excluded. Rather, any specific controversy pertaining directly to a state-owned issuer, will be evaluated on a case-by-case basis. This analysis will be based on the principles discussed in section 2.2. Sub-sovereign entities will be assessed in line with the mother country.

“
We expect sovereigns to properly manage their natural resources and protected areas, comply with international environmental agreements

3.

Step 2: Are entities able and likely to contribute to the transition to a sustainable society?



3.1. Introduction








In the second step, each entity is classified in one of the remaining five categories of the Sustainable Investment Framework shown in figure A1, based on where they stand in the journey towards a sustainable way of operating. Are they frontrunning and creating positive impact by producing products and services that enable others to make the transition? Do they have the capacity to adapt and follow a science-based pathway in the transition steps they are taking? Or are they lagging in how they account for sustainability-related risks, while continuing to create negative impact and financial risks for our portfolios?

We evaluate how an entity manages its sustainability-related risks and how well it reduces its negative or contributes to a positive real-world impact. In section 3.2, we first describe which levers an entity can pull to reduce risks and impacts related to the major challenges that need to change when transitioning to a sustainable society – climate change, biodiversity loss, water scarcity, materials use and waste, basic needs, fairer society and strong governance. In section 3.3 to 3.9, we describe for each of these levers how we measure an entity’s capacity entity to manage their sustainability-related risks and impacts.

3.2. Levers of change

We call the ability and likelihood that an entity contributes to the transition to a sustainable society their adaptive capacity. An entity has a high adaptive capacity if it is making the transition or succeeds in turning sustainability-related risks in opportunities to create a positive impact. It has a low adaptive capacity if it does not properly manage its sustainability-related risks and continues to make a high negative real-world impact. To identify an entities’ adaptive capacity, we consider which levers it can pull – or, how it can change its operations and processes – to reduce its sustainability-related risks or reverse its negative impacts on the main sustainability challenges. We consider seven levers that jointly cover how an entity is impacted by or impacts the above-mentioned sustainability challenges. Four levers represent its environmental behaviour and three levers reflect its social and governance behaviour – see table A3.¹⁸ Each of the levers can have an impact on multiple planetary boundaries and social themes.

Table A3: Levers of change reflecting what entities can do to reduce their sustainability-related risks and impacts.

Levers of change		
	Fossil fuel use	Management of fossil fuels use impacts among other things climate change, biodiversity loss, accessibility to basic services (energy availability) and a fairer society (human health).
	Water use	Management of freshwater use and discharge impacts among other things water scarcity and water quality, availability of basic services (drinking water and food) and a fairer society (health).
	Land and ocean use	Land conversion, land and ocean use overexploitation, and natural resource management especially for agricultural and soft commodity purposes, impacts climate change, biodiversity loss, and water scarcity but also availability of basic services (food) and a fairer society (treatment of local communities and unequal access to land).
	Materials use and waste management	Management of scarce natural resources, chemical substances and hazardous waste and plastics potentially contributes to climate change, water pollution and a fairer society (human health).
	Human capital management	Activities related to labour and union rights, employee health & safety and labour practices, impact accessibility and availability of basic needs and a fairer society.
	Social capital management	Actions to maintain the license to operate on which businesses and sovereigns depend, impact accessibility and availability of basic needs and a fairer society, e.g. through impacts on human rights, community relations, social equity and access to health care and finance.
	Organisational behaviour and integrity	Actions to create an ethical business environment, impact good governance and a fairer society. For companies this refers to their own business model, but also to how they treat companies and other stakeholders up- and downstream in their value chain.

¹⁸ These levers are specific enough to formulate how entities can reduce the pressures for the challenges that currently receive most attention. They are also broad enough to incorporate newly emerging pressures related to new and currently unknown challenges.

It differs per (sub)sector, which levers are material to an entity. Following the GICS sector division, table A4 shows per sector which levers are most material.¹⁹ For the risk

assessment of an entity, we only consider the levers that are material. For the evaluation of the real-world impacts, we consider all potential impacts.

Table A4: Materiality map showing which levers are material to the various sectors.

Sectors	Levers of change						
	Fossil Fuel use	Water use	Land use	Materials & Waste Man.	Human Capital Man.	Social Capital Man.	Organisational Behaviour & Integrity
Communication services	—	—	—	—	●	●	●
Consumer discretionary	●	●	●	●	●	●	●
Consumer staples	●	●	●	●	●	●	●
Energy	●	●	●	●	●	●	●
Financials	●	—	—	—	●	●	●
Health Care	●	—	—	●	●	●	●
Industrials	●	●	●	●	●	●	●
Information technology	●	●	—	●	●	●	●
Materials	●	●	●	●	●	●	●
Real estate	●	●	—	—	—	●	●
Utilities	●	●	●	●	●	●	●

- = Material for most entities in the sector
- = Less likely to be material for the entities in the sector

Note that materiality is not necessarily the same for each of the sub-sectors within a certain sector.

Classifying entities

Based on an assessment for the different levers, we classify each entity into one of the following five categories:²⁰

- **Positive Impact:** Entities taking opportunities to make a positive and intentional contribution to the transition towards a sustainable future or to the UN Sustainable Development Goals (SDG) through the products or services they sell, while already operating within the planetary boundaries and respecting the social foundations. (See the Cardano Impact Investing Policy for more detail).
- **Sustainable:** Entities contributing to our sustainability objectives or SDGs, operate sustainably, inflict no significant harm to environmental or social objectives, and operate within the planetary boundaries while respecting social foundations. These entities support and do not hinder the transition towards a sustainable society. In some cases, these entities may further develop their products to create positive impact.
- **Adapting:** Entities that are committed to transition their activities, products and services where these have negative impacts on social or environmental objectives. They
 - have concrete and verifiable strategies, science based where possible, to adapt substantially and operate within planetary boundaries and social foundations within an acceptable timeframe through innovative solutions, in operations and/ or via improvement in social and governance practices
 - need time to progress but are sufficiently managing the risks to which they are exposed
 - will support the transition to a sustainable society if they continue making progress.
- **At risk:** Entities operating outside planetary boundaries or not respecting social foundations. They
 - are not transitioning on the required transition pathway

¹⁹ With respect to their procurement, companies in which we invest are expected to adhere to the criteria in this document. Also for their contracts with subcontractors and suppliers, they are expected to use these criteria.

²⁰ Companies that do not pass step 1, not complying with our principles deemed fundamental to sustainable investing, fall in the "Harmful" or "Non-compliant with international standards" categories. See section 2 of this document.

- acknowledge sustainability risks, but lack the capacity (and perhaps the will) to adapt quickly enough
- may recognise the need to adapt but do not yet demonstrate the capacity to manage the transitions, causing short- to medium-term operational and financial risks.
- Non-Adapting: Entities without the capacity or the will to bring risk management up to standard. They
 - lack sound management strategies for material issues
 - are exposed to high risks
 - face significant operational and financial risks in the short- to medium-term and may end up being stranded.

For the assessment of an entity, we consider for each lever the following aspects:

- Exposure to material sustainability risks and the potential positive and negative impacts thereof. We determine exposure scores per lever, based for instance on the carbon or water intensity of an entity, the regulatory regime and physical environmental characteristics in their location of operations, the nature and labour intensity of their operations, the dependency on the supply chain for (raw) materials, or the value of the entity that may be at risk due to environmental change.
- Management capacity to make the required adaptations to their operations, such that they manage their risks and reverse their negative impact or increase their positive impact.²¹ Management capacity scores per lever depend on the strategies, policies, targets, certification of production systems and demonstrated performance of entities to manage the risks caused by the transition. Performance is demonstrated, for instance, through trends in carbon reduction pathways and number of controversies. We also demonstrate good or bad performance through revenue or capital expenditure shares from activities with positive impacts such as renewable energy or regenerative agriculture, or from activities with negative impacts such as

thermal coal activities or activities in areas with high-conservation values.

A high score on management capacity is a forward-looking indication that the entity has the capacity to manage the exposure risk and to lower negative impact or even create positive impact. As a result, the framework follows a double materiality approach. For the exposure and management capacity scores, we use multiple data sources that may vary per lever.²² The next sections discuss the indicators we used for the assessment.

For each lever of change, we assign threshold levels that define the boundaries between each of the five categories.

- For the ‘non-adapting’, ‘at-risk’ and ‘adapting’ categories, thresholds give the management capacity an entity needs to demonstrate for a certain exposure level to be considered as operating for instance as ‘adapting’. For the category ‘adapting’ the thresholds are stricter than for the ‘at-risk’ category, which again are stricter than for the ‘non-adapting category’. Thresholds differ per lever as not all themes are equally material or impactful to society.
- For the ‘sustainable’ category, management thresholds are stricter than for the ‘adapting’ category, such that the entity does no harm to the environment or society. As extra requirement to prevent significant harm to be caused, entities should not be negatively aligned with the SDGs. To demonstrate that entities positively contribute to any of our sustainability targets, their sustainable impact revenue must be sufficiently high or they must be positively aligned with at least one of the SDGs.
- For the ‘positive impact’ category, on top of the above-mentioned requirements, entities must show more proof that they create positive impact or are aligned with the SDGs and demonstrate their intention to positively contribute a sustainable society.

The lowest threshold to which an entity doesn’t comply, in principle, determines the category to which it is assigned. For instance, a utility company not passing the ‘non-adapting’ thresholds for the fossil fuel lever is classified as ‘non-adapting’, irrespective of how good its water and land use scores are, and if a fundamental analysis confirms its non-adapting behaviour. The classification based on these quantitative thresholds can be overruled if a fundamental

²¹ Two types of risks are considered. First, a declining carrying capacity of the planet and a weak social basis lead to physical risks. Examples include water scarcity due to climate change, loss of soil fertility due to overexploitation and increasing health problems or social unrest due to growing inequality. Second, the call for a more sustainable world leads to changes in government policies and consumer demand that will speed up the transition towards cleaner and more responsible modes of operation. This creates transition risks for those who do not adapt.

²² The core data, obtained from an external data provider, are supplemented with data on carbon intensity exposure, coal expansion plans, land use and deforestation behaviour, value at risk due to expected market and policy changes and contributions to the SDGs from amongst others MSCI, Urgewald, CDP, Sustainalytics, Satelligence and other data providers. These data sources are used as guideline from which we may deviate if deemed pertinent given other qualitative or quantitative information. The indicators used include the Principal Adverse Indicators as given by the SFDR and for which we report in the periodic SFDR disclosures and the Cardano Principal Adverse Impact Statement.

analysis shows sufficient proof that the data used do not sufficiently well reflect the entity's actual behaviour, sustainability-related risks and impacts. Based on the category, entities qualify for certain investment strategies. We evaluate the classifications at least four times per year.

Threshold levels are based on the best available (scientific) knowledge about impact to the planetary boundaries or social foundations. Over time, when the transition progresses, the threshold levels for a specific lever may change. As new data becomes available, new measurement methods are developed, and innovations allow for new updates, threshold values will be redefined. In this way, entities are encouraged to continue their transition.

The next sections discuss how we measure exposure and management capacity scores for the seven levers.

3.3. Fossil fuel use

3.3.1. Background

Carbon emissions from fossil fuel use are the dominant contributor to climate change. But fossil fuel use also impacts other planetary boundaries. Absorption of CO₂ by the world's oceans leads to ocean acidification, industrial processes using fossil fuels may affect the ozone layer, fossil fuel extraction activities lead to deforestation and land use change, and fossil fuel combustion releases nitrogen oxides and other pollutants. These challenges also erode our social foundations as they negatively impact local populations and health, and in many cases especially hit the poorest groups. Transitioning to a low-carbon economy is the main solution to these challenges.

Global and regional climate regulations already significantly encouraged a transition towards low-carbon solutions, but the pace of transition is too slow to prevent global warming to exceed 1.5° Celsius compared to pre-industrial levels. To reach the targets as agreed upon in 2015 in the Paris Climate Agreement, entities should significantly reduce their greenhouse gas emissions and make further steps in the low-carbon transition. Renewable energy generation is growing fast, but fossil fuels still constitute approximately 80 percent of energy resources in the world economy. It is expected that fossil fuel demand will peak this decade, that low-carbon technologies' costs will further drop and that governments will step up their efforts to reduce greenhouse gas emissions. This is expected to impact the economy significantly, and entities must prepare for that. Even without stricter regulations to address climate change, the convergence of non-regulatory factors could exert headwinds on carbon-intensive entities as well as entities that through their supply chain are dependent on these entities and further promote low-carbon solutions.

The transition to a low-carbon economy impacts all sectors in the economy. It impacts those with high dependency on fossil fuels in their operations (scope 1 and 2 emissions) differently from those with carbon-intensive products and services (scope 3 emissions). Entities with carbon-intensive products, especially oil, gas and coal producers, will step by step have to face reduced demand for their products and services when more low-carbon substitutes come available and fossil fuel demand drops. They may continue to grow this decade, but they will experience more headwind and stricter regulations. On the other side, entities producing low or zero carbon products benefit from the transition to a low carbon economy. Entities with carbon intensive operations run the risk of incurring liabilities due to their greenhouse gas emissions. Grid operators and energy utilities will see business change and must eventually transform to a renewable energy company. Energy intensive industries – such as cement, steel and chemicals producers and companies in the transport, packaging sector, semiconductor, real estate and agriculture & food sectors – are exposed to additional costs in the form of fines, carbon taxes, required capital investments in new clean technologies, etc. On the other hand, entities providing renewable energy or innovative, energy efficiency solutions may benefit from the ongoing low-carbon transition.

Aligning investment with the Paris Climate Agreement requires capital flows to shift from high-carbon to climate-friendly investments. Financial institutions can speed up this process by introducing, incentivising and catalysing a transition process that swiftly and significantly reduces fossil fuel use across all economies. It is crucial they align their financing decisions with long-term climate goals, given the long lifetime of physical assets, the urgency of decarbonizing the economy to prevent catastrophic climate change, and the increasing climate-related financial risk in portfolios.

3.3.2. Classifying entities

Classifying entities on how they manage fossil fuel related risks is mostly based on how they manage their exposure to low-carbon transition risks.

Exposure

We measure an entity's exposure to low-carbon transition risk to a large extent through the carbon intensity of its operations (scope 1 and 2) and its products and services (scope 3). Boundaries for emission intensities used in the exposure scores are given in Table A5. Step by step, the emission intensity thresholds will be made stricter, reflecting the need to become climate neutral in line with the Paris Climate agreement and the risks entities incur when they fail to do so.

Table A5: Relation between exposure and carbon emission intensity

Emission intensity*	Description
< 0	Entities providing low/zero carbon solutions for whom the transition creates opportunities
0 – 500	Entities with less carbon intensive operations and products, with low exposure to low-carbon transition risks
500-8,000	Entities with moderately to highly carbon intensive products, with moderate exposure to low-carbon transition risks
≥ 8,000	Entities with very high exposure to transition risk and who run the risk of being stranded in the short to medium term

Note: * In tonnes of CO₂e per million US dollar

Next to carbon intensity, the following factors influence the exposure scores:²³

- Percentage of electricity generated from thermal coal and revenue share from thermal coal mining;
- Percentage of electricity from renewable sources;
- Expansion plans for coal-fired power generation;
- Location of production facilities, impacting the exposure to strict climate and energy policies;
- Value at risk for available climate scenarios;
- For financial institutions, the share of their loans and investments in carbon-intensive entities and activities.

Management

We are committed to a net zero greenhouse gas target in 2050. Achieving this goal requires entities to properly manage their fossil fuel use and search for ways to reduce it and substitute it with low-carbon alternatives. Management scores of fossil fuel-related exposure risks are based on policies, climate mitigation commitments, climate targets, governance structures, risk management initiatives and low-carbon transition performance. These elements measure the entity’s preparedness and capacities to make the transition to a low-carbon economy. Required efforts differ between users and producers of fossil fuels. Users of fossil fuels must reduce carbon intensity of their operations, transitioning towards the use of energy saving technologies and renewable energy sources. Producers of fossil fuels, i.e. the energy sector, must transform their entire business model as demand for fossil fuels will eventually drop significantly.

Management scores depend among other things on:

- Disclosure of scope 1,2 and 3 carbon emissions in line with international standards such as TCFD, PCAF and CSRD;
- Participation in Carbon Disclosure Project (CDP);
- Carbon policies and implementation mechanisms, including short, medium and long-term carbon reduction targets preferably approved by the Science Based Target Initiative;
- A description of the envisaged transition pathway, preferably in line with the Transition Pathway Initiative (TPI);
- Publication of carbon strategies, containing among other things proposals for production process improvements to reduce emissions (such as alternatives for flaring), installation of emissions capture equipment, targets to switch to cleaner energy sources, targets on energy-efficiency improvements, implementation of environmental management system, etc.;
- Participation to and disclosure of relevant multi-stakeholder or industry initiatives;²⁴
- Integration of transition risks into regular risk assessments and strategies;
- Disclosure of carbon intensity trends and track record of achieving carbon reduction targets;
- Plans to invest in new, or expansion of existing, coal mines and coal-fired power plants;

²³ Note that the topics considered in the exposure score include the mandatory greenhouse gas emissions related Principal Adverse Indicators set out in the SFDR.

²⁴ Attempts to influence decisions made by regulators to strengthen climate policies will negatively influence management scores. In addition, these factors especially focus on CO₂ emissions. Yet, they equally apply to the emission of other air pollutants such as nitrogen oxide, ammonia and particulate matter, that are also caused by the combustion of fossil fuels and that cause large scale air pollution in many parts of the world, especially in large cities.

- Plans to invest in clean tech business segments that are related to entity’s core business, such as renewable energy generation (such as hydro, solar, wind, tidal or geothermal power);
- Plans to invest in renewable power through electrical network expansion, equipment commercialization, and ‘green power’ offerings to customers;
- Plans to invest in initiatives to modify existing oil and gas infrastructure to transport low- or zero-carbon energy sources, such as low-carbon hydrogen and biomethane, at an affordable cost;
- For financial institutions, the extent to which they assess and mitigate the risks related financing carbon-intensive corporates and activities.

Classification

To classify entities, we have set thresholds to define boundaries between categories. Generally, we apply the following rules:

- Entities are classified as ‘non-adapting’ if their exposure and management are such that they
 - have an average carbon intensity of more than 8,000 ton CO₂e per million USD revenue.
 - still have advanced plans to expand their coal-fired power generation capacity.²⁵
 - do not have credible plans to reduce their revenues from thermal coal mining or thermal coal power generation according to the coal phase out pathway as defined in our Climate Strategy.²⁶
- Entities are likely to be classified as ‘at-risk’ if they
 - are at the high end of the moderately exposed group risk, especially if their management scores are moderate to low. Utilities with a significant share of coal firing that are not already classified as non-adapting, are likely to be classified as at-risk, unless their strategy, policy and actions to phase out coal-fired power stations are sufficient and in line with the coal phase-out pathway in our Climate Strategy. Likewise, most oil majors that

are not already classified as ‘non-adapting’, will be classified as ‘at-risk’, unless they are making credible steps towards a low-carbon business model and they are engaged by us.

- are reported to have a too high Value-at-Risk for the majority of the climate transition scenarios available to us and don’t act to reduce these climate risks.²⁷
- Entities are likely to be classified as ‘adapting’ if they are at the low end of the moderately exposed group risk, and have moderate to high management scores.
- Entities are likely to be classified as ‘sustainable’ if they are on the transition pathway towards climate neutrality, with SBTi approved or committed targets, have set a carbon reduction target of at least 50 percent for 2030 or are among the entities with industry-leading carbon management plans.
- Entities are likely to be classified as ‘positive impact’ if they intentionally develop products or services that enable others to reduce their climate impacts, such as developers of renewable or energy saving technologies, given that their operations do not cause significant harm to any of the other sustainability themes.

The information for measuring exposure and management comes from external data providers, supplemented by additional data for example on plans for developing new coal-fired power plants.

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Entities are likely to be classified as ‘positive impact’ if they intentionally develop products that enable others to reduce their climate impacts.

²⁵ Building new coal-fired plants creates risks for stranded assets and maintaining high shares of coal-fired power generation creates risks of high regulatory costs or reputational risks. For that reason, we classify companies with expansion plans for coal-fired power plants as non-adapting. This assessment is based on data from Urgewald, a German NGO monitoring coal use.

²⁶ We consider thermal coal activities to be unacceptable and have set the target to phase out coal at the latest by 2030. For this we apply a pathway where revenues from thermal coal mining should not exceed 15 percent in 2023, 10 percent in 2025 and 2 percent in 2028 and revenues from coal-fired power generation should not exceed 25 percent in 2023, 15 percent in 2025 and 5 percent in 2028. It is noted that currently the majority of the companies that have a revenue share of coal mining less than 15 percent or a revenue share of coal-fired power generation less than 25 percent are already classified as non-adapting because of too low management scores on their low-carbon transition plans. See also the Cardano Climate Strategy.

²⁷ We evaluate the transition risks of issuers for several policy scenarios that show possible states of society and the impacts thereof for company valuation. Issuers with high transition risks for multiple climate scenarios are likely to be highly exposed to the low-carbon transition. For this, use is made of the fifteen climate transition scenarios currently available to us. Especially issuers with an average climate transition value at risk below -50 percent are being classified as at-risk if their transition plans are assessed to be insufficient.

We adopt special criteria for two subsectors.

Oil Pipelines and Gas Grids

While fossil fuels may in the future still be needed in sectors like plastics and petrochemicals, renewable energy sources will be the backbone of the world's future energy system. For example, in Europe, it is estimated that natural gas pipelines are at risk of becoming stranded assets by mid-century as the European Commission pursues its 2050 decarbonization strategy. Nevertheless, natural gas can provide near-term benefits when replacing more polluting fuels as transitioning energy source. A key longer-term question is to what extent oil and gas pipelines can be applied for truly low- or zero-carbon energy sources, such as low-carbon hydrogen and biomethane. Until that question has been answered, we do not divest from oil and gas infrastructure all together. Maintaining the infrastructure is also important, not least because the composition of the fuels or gases transported through these networks starts to change with the increased uptake of biofuels or of low-carbon gases such as hydrogen and biomethane. However, to mitigate future risks from the energy transition, Cardano determines to what extent oil pipeline and gas grid entities are preparing themselves to ensure that low-carbon fuels and gases can be transported in the future.

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We do not believe nuclear energy is the ultimate form of climate-neutral energy,...

Nuclear Energy

Nuclear energy is an important energy source. Currently, it is the world's second largest source of low-carbon power after hydro energy and provides about 10 percent of the world's electricity according to the World Nuclear Association. Positive attributes of nuclear energy are that its energy production is carbon-free, there is an absence of other toxic emissions, such as NO_x and SO_x emissions, and it has a relatively low land footprint due to the high energy density of nuclear power stations. Yet, nuclear energy has

potential safety risks in case of accidents or terrorist or military attacks, problems with radioactive waste disposal, high costs related to the construction of new plants, cost overruns of new plants and a lack of a clear political strategy which creates an insecure basis for long-term investments.

We do not believe nuclear energy is the ultimate form of climate-neutral energy, mainly due to the negative externalities attached to this energy source. However, wise deployment of the energy source can diversify the energy mix, enhance energy supply security by providing system adequacy, flexibility and baseload capacity, facilitate the rise of renewables and reduce the world's reliance on fossil fuels. We acknowledge the International Energy Agency (IEA) who stresses that a climate neutral energy system without nuclear energy is difficult to achieve at reasonable costs. A growth in the supply of nuclear energy is part of every scenario that is presented in the IEA World Energy Outlook. The greater the carbon reduction assumed the higher the growth rate of nuclear energy supply needed. All entities in our investment universe are screened on the steps they take in the transition away from fossil fuels. The deployment of nuclear energy can play a role in this transition. Under certain conditions, entities engaging in nuclear energy production are therefore allowed in our investment portfolio.

In line with the expectations from the IEA, we set restrictions to investments in nuclear energy. Until 2030, portfolio entities can continue to invest in maintenance and refurbishment of existing large-scale power plants. We also allow portfolio entities to invest in newly build large-scale capacity, but solely in combination with and as part of a long-term policy to gradually replace such reactors with more innovative new generation technologies where feasible, such as Small Modular Reactors (SMR). Additionally, investments need to be supported by adequate safety policies, arrangements for the safe storage and disposal of nuclear waste and adequate decommissioning plans. To further mitigate risks, we also consider the geopolitical situation at facility locations when investing in entities involved in nuclear energy. From 2030 onwards the IEA expects the developments in SMR to have progressed sufficiently. From this date onwards, we expect portfolio entities to primarily focus newly build capacity on new generation technologies that adequately address the negative externalities of nuclear energy generation.

25 Building new coal-fired plants creates risks for stranded assets and maintaining high shares of coal-fired power generation creates risks of high regulatory costs or reputational risks. For that reason, we classify companies with expansion plans for coal-fired power plants as non-adapting. This assessment is based on data from Urgewald, a German NGO monitoring coal use.

26 We consider thermal coal activities to be unacceptable and have set the target to phase out coal at the latest by 2030. For this we apply a pathway where revenues from thermal coal mining should not exceed 15 percent in 2023, 10 percent in 2025 and 2 percent in 2028 and revenues from coal-fired power generation should not exceed 25 percent in 2023, 15 percent in 2025 and 5 percent in 2028. It is noted that currently the majority of the companies that have a revenue share of coal mining less than 15 percent or a revenue share of coal-fired power generation less than 25 percent are already classified as non-adapting because of too low management scores on their low-carbon transition plans. See also the Cardano Climate Strategy.

3.4. Water use

3.4.1. Background

Water is an essential resource. All ecosystems and life on the planet are dependent on water and access to water and sanitation is a human right. Water is an essential element in agriculture, energy production and many other economic activities. Yet, water is becoming increasingly scarce. It is anticipated that by 2030 only 60 percent of the world's population will be able to meet their need for water. In addition, water quality degradation (from agriculture, industry, plastics, and sewage) is rising as a global risk to economic growth and community wellbeing.²⁸

Three water-related challenges impact entities

- **Quantity:** Society is often faced with too much water (floods, extreme weather, rising sea levels) or too little water (drought, aquifer depletion). Both can challenge entities in their supply chains and operations and lead to severe interruptions of production and services. They can also put assets and capital expenditure plans at risk, for instance due to failed harvest due to drought, operational interruptions due to a lack of cooling water, damaged infrastructure due to floods, or the interruption of tourism due to extreme weather circumstances.
- **Quality:** Water pollution hurts economic activities, people's health and ecosystems. Water pollution is caused for instance by salinization, oil spills, organic matter pollution, and inorganic matter pollution such as marine plastic debris and heavy metals. It can be caused by point sources, such as emissions from individual factories, or diffuse sources, such as for leaching of excess plant protection chemicals used in the agricultural sector. Temperature can also be an important limiting factor for the use of water, for example when it is needed for cooling purposes. Entities causing water pollution may face higher fines, higher treatment costs or loss of their license to operate. Those dependent on clean water will face higher treatment costs or disruptions in their production processes.
- **Accessibility:** With increasing competition for water resources, access to water comes under pressure. Accessibility issues can hurt entities directly, if they lose their access to water, or indirectly, if an entity's water use limits people's access to water with legal, reputational or operational consequences.

Without being exhaustive, water is highly material for the mining, energy, agricultural and real estate sector, either because of water scarcity risks, water quality issues or flooding risks. Materiality of the water challenges differs per entity, depending on the specific nature of their operations and the regions in which they are active. Water-dependent entities are likely to experience higher water-related operational (physical) risks, leading to production losses, production interruptions or higher costs to safeguard water supplies. Also those impacting water scarcity or pollution, e.g. through their water withdrawal, consumption or pollution, are likely to experience higher risks. Due to consumers becoming more critical about entities' negative impacts on water systems and stricter legislation, entities run reputational, operational, market and regulatory/litigation risks that are relevant to investors.

3.4.2. Classifying entities

Awareness of the potential water-related risks and opportunities is increasing, and more entities act to prevent risks or capitalize on opportunities. We believe that businesses need to transform from being water managers to water stewards to mitigate the water-related risks. This means they take responsibility beyond the gates or their sites to ensure social, environmental and economic benefits.²⁹

Classifying entities is mostly based on how they manage their exposure to water-related challenges.

Exposure

Entities are more exposed if they:³⁰

- have a high share of operations in geographies projected to experience water stress and water scarcity or geographies prone to flooding;
- have a high share of operations classified as water intensive (based on estimated water use relative to sales);
- have a high share of operations with high risks of causing water pollution.

Management

We are committed to a water-neutral target in 2030 for our directly-managed assets. This means that businesses consume no more water than nature can replenish, especially in water-stressed areas, and cause no more pollution or impacts than is acceptable for the health of humans and natural ecosystems. Achieving this goal requires entities to properly manage their water use. For this, we consider the extent to which entities:

²⁸ Damania, R., Desbureaux, S. et al. (2019). Quality Unknown: the invisible water crisis. Washington DC. The World Bank.

²⁹ This is in line with the key principles of the Valuing Water Initiative, that argues that investors should protect water sources and recognize water's multiple values; see <https://www.government.nl/topics/water-management/valuing-water-initiative>.

³⁰ Note that the topics considered in the exposure score include the mandatory water related Principal Adverse Indicators set out in the SFDR.

- Respect the human right to water and understand their responsibilities;
- Be transparent about (trends in) their water dependency, withdrawals and consumption (quantity and quality) – by following the GRI 303 reporting guidelines on water and effluents – including the identification of hotspots of reputational, operational and regulatory water risks in the value chain, the potential materiality of those risks and mitigation strategies, including policies, action plans and monitoring practices;
- Formulate targets, policies, standards and implementation plans to improve their water consumption performance and ensure continuous improvement and accountability;
- Avoid operations in areas with high water stress or, for operations in water stressed areas, assure that underlying causes of water stress are responsibly and fully mitigated, and contributions are made to improved management;
- Have mitigation measures in place to address community and ecosystem water requirements where significant impacts to water resources are likely;
- Successfully implement processes to reduce water intensity, (re)use water or use water from alternative sources (i.e. grey,- recycled or rainwater);
- Strive to have zero impact on water quality (avoid pollution in any way or purify water after use);
- Seek to phase out or find alternatives for products lines that are water polluting;
- Engage and support stakeholder efforts to collectively address basin risks, develop shared policy advocacy positions in key water risk areas and consider water needs of stakeholders especially those most vulnerable;
- Control water management in the supply chain.

Classification

When assessing entities, we evaluate how well entities manage the water challenges, not only to reduce impact, but also to reduce water-related risks or take opportunities. For sectors dependent on water or impacting water resources the most – i.e. those with high exposure score – strict management scores are required to prove entities manage their and make the required transitions.

On top of the water exposure and management scores,

- entities may be classified as ‘non-adapting’ or ‘non-compliant with international standards’ if they are involved in (very) severe and recurring water-related controversies or if they consciously are putting water resources at risk, such as entities involved in riverine tailings disposal (the dumping of mining waste in rivers).
- entities may be classified as ‘sustainable’ if they act as a water-stewards and pro-actively manage water resources in their own operations as well as in their supply chain. Such entities have high management scores as they provide for instance water, sanitation and hygiene for employees, use water efficiently and do not consume water in places of scarcity, do not degrade water quality, collaborate with other actors in a specific basin, support greater access to clean water for regional stakeholders, and set context-based water targets.
- entities may be classified as ‘positive impact’ if they provide solutions for the global water challenges, such as products or services that improve the availability and quality of, or access to, water.

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Improper and intensive land and ocean use contributes to several of the global challenges.

3.5. Land and ocean use

3.5.1. Background

Improper and intensive land and ocean use contributes to several of the global challenges. Climate change cannot be halted if the methane, CO₂ and NO_x emissions from intensive agriculture, livestock raising, deforestation and landfills are not reduced. These activities cause around 20 percent of the global greenhouse gasses emissions. Intensive land and ocean use and deforestation also significantly contribute to the alarming rate of biodiversity loss. Both challenges also reinforce one another as deforestation alters the climate system, which in its turn

impacts biodiversity. Next to that, land use change impacts water availability and water quality but also local livelihoods as degraded areas may become uninhabitable and land use degradation especially hits women and the poorest groups in society.

Land is a material input for many entities. Globally, entities and governments have become more aware of the risks related to irresponsible land use, deforestation and soil degradation. Land is recognised as a crucial – albeit finite – resource, necessary to produce food, fibre, fuel and energy, the provision of shelter to the population and for protecting biodiversity and ecosystems. Many entities, especially in the primary sector, are directly dependent on land resources, but through their land use, they contribute to biodiversity loss, climate change, water scarcity and distortions in the nitrogen and phosphorous cycles. Even if sectors are not directly dependent on land resources for their operations, legal and reputational risks are increasing as governments and consumers respond to the impact generated by entities' activities.

The sector most dependent on and mostly impacting land resources is the agricultural sector. Agricultural expansion – especially for commodities such as cattle, soy, palm oil and timber – is responsible for circa two thirds of deforestation in the tropics and about a quarter of the terrestrial area worldwide suffers from land degradation, caused among others by intensive land use. This not only has negative feedback effects for the agricultural sector where land degradation may result in declining productivity and higher costs. It also has global consequences through its impact on multiple supply chains and its impacts on local livelihoods. Other sectors impacting land use and land cover are mining and unconventional oil and gas exploration, such as shale oil and gas, tar sands and arctic oil drilling. These activities may jeopardize environmental quality in or near production locations and seriously impact local communities. Next, urbanisation and urban sprawl impacts large areas of land. Also overexploitation of marine resources and coastal zone exploitation are covered in this lever. Mangrove clearing, coastal zone development, overfishing and industrialized exploitation of marine resources impact biodiversity and local communities and may lead to increased probabilities of coastal flooding.

3.5.2. Classifying entities

We support the target as set in the Kunming-Montreal Global Biodiversity Framework to reverse the trend of biodiversity loss. We work towards a situation with zero net deforestation in our directly-managed assets by 2030.³¹ For this, we evaluate how entities manage their land and ocean related risk exposure and impacts on these resources. We distinguish between:

- **Direct land and ocean uses:** Activities that directly depend on land and marine resources, for instance those in forestry, agriculture and fisheries sectors, and those that directly impact land and marine resources such as the coal, oil and gas and the metals and mining sectors. We also specifically focus on the negative impacts of unconventional oil, gas and mining exploration activities such as shale oil and gas, tar sands, deep sea and arctic oil and gas drilling and deep sea mining.
- **Indirect land and ocean uses:** Activities that depend on or impact land and marine resources indirectly through the supply chain, such as for food products, construction materials or packaging industries whose operations rely on raw material sourcing but also contribute to the global waste problem.

Classifying entities is mostly based on how entities manage their exposure to land use related challenges.

Exposure

Exposure on direct land and ocean use is mostly measured through the extent to which the entity's operations (potentially) involve significant disturbances on land and marine areas. Exposure scores are higher if activities take place, for instance, in fragile environmental conditions, in (marine) protected areas or in areas classified as hot spot biodiversity areas. It is especially high if operations take place in high conservation value (HCV) areas³² or if entities are engaged in activities such as:³³

- logging on steep slopes, riverbanks, peatlands, wetlands or primary forest;
- large scale monoculture plantations in detriment of original vegetation;
- illicit activities, such as poaching and dumping waste;
- use of genetically modified organisms to cultivate trees;
- use of elemental chlorine to bleach paper.

Entities also receive high exposure scores if they earn significant revenues from unconventional exploration methods such as shale oil and gas, tar sands, deep-sea and arctic oil and gas drilling or deep-sea mining activities. Finally, entities that may indirectly impact land and marine resources through their supply chains, especially those dependent on soft commodities and raw materials, generally receive high exposure scores.

³¹ This aim also contributes to the target of reaching net-zero greenhouse gas emissions by 2050, by enhancing the sequestration capacity of carbon sinks and by reducing land-based carbon and methane emissions.

³² High conservation value forests include for instance mangroves, rainforests, bogs and primeval forests.

³³ Note that the topics considered in the exposure score include the mandatory biodiversity related Principal Adverse Indicators set out in the SFDR.

Management

High land use management scores essentially reflect the efforts to prevent and/or minimize disturbances to land and marine systems, increase protection of ecosystems and their biodiversity, as well as engage properly with local communities. Generally, management scores for entities directly using land or marine resource are higher if they:

- Adhere to relevant initiatives such as the Taskforce on Nature-related Financial Disclosures (TNFD), CDP Forests Program, the GRI guidelines, or the International Sustainability Standards Board;
- Adhere to sector-specific guidelines or eco-label certification for their products and their suppliers, such as those from the Forest Stewardship Council (FSC and FSC Chain-of-Custody certification), FAO Code of Conduct for Responsible Fisheries, Aquaculture Stewardship Council (ASC), Marine Stewardship Council (MSC), GLOBAL G.A.P GGN Aquaculture standard, Humane Farm Animal Care (HFAC), Global Animal Partnership, RSPCA Assured, Animal Welfare Approved by A Greener World, Beter Leven (levels 2 and 3), the Roundtable on Sustainable Biomaterials (RSB), Roundtable on Sustainable Palm Oil (RSPO), Round Table on Responsible Soy (RTRS) or UTZ Certified Products. Entities following such certification are expected to report on the implementation of these guidelines, continuously improve their performance based on the guidelines or certification schemes and refrain from operating in biodiversity sensitive areas.
- Disclose no deforestation/no land conversion policies and strategies and/or policies to reduce land or marine disturbances;
- Adopt programs to rehabilitate disturbed areas;
- Have a demonstrated performance track record of minimising or preventing disturbances from operations;
- Perform community and environmental impact assessments on biodiversity prior to new operations assuring operations lead to no or minimum impact or take actions to compensate for the impact;
- Regularly perform environmental impact assessments on biodiversity to identify trends in the drivers contribution to loss of biodiversity or ecosystem integrity;
- Comply with EU regulations on the use and disclosure about GMOs in agricultural processes.

For entities indirectly using land and marine resources, management scores depend on:

- presence of sound policies and targets assuring that raw materials are not sourced from areas that are deforested, converted or overexploited;
- percentages of products traceable to the origin and externally certified by the most stringent standards;
- number of severe controversies in raw material sourcing.

Next to the above data, additional sources are used to complement insights into entities' performance and contribute with working groups dedicated to further measuring entity's land use practices.³⁴ For instance, data from the Soft Commodity Risk Platform (SCRIPT), SPOTT, Forest500 and ForestIQ are used to gather more in-depth information about the soft commodities sectors (paper, timber, soy, palm oil, cattle) on their land-use management policies, from producers to retailers, or data from the Collier FAIRR Protein Producer Index is used to learn more about the material land use risks of meat and dairy producers. It provides insights in the capacity of entities that currently do not present enough management abilities to tackle the risks to which they are exposed, informing on potential engagement objectives. Additionally, through its partnership with Satelligence, Cardano invests in data development for deforestation monitoring. For this, satellite images are used to trace land cover changes and deforestation, and link this to the entities responsible for this.

Classification

On top of the classification based on the thresholds set for the land use exposure and management scores, entities

- are classified as 'non-adapting' if their share of revenues from unconventional oil and gas exceeds the phaseout pathway according to which revenues should not exceed 15% in 2024, 10% in 2026, 5% in 2028 and 0% in 2030.³⁵
- may be classified as 'at-risk' if they are involved in (severe) controversies on raw material sourcing. If they do not have adequate policies in place to resolve these controversies, they may be considered 'non-adapting'.
- may be classified as 'sustainable' if they adopt responsible land management practices and clear land use policies, such as programmes to minimise disturbance from operations on biodiversity and

³⁴ For instance, Cardano is part of the Platform Biodiversity Accounting for Financials to develop measurement approaches to the impact of investments portfolios on biodiversity. Cardano also embraces other initiatives that promote transparency, such as the CDP Forests Program. The goal of these initiatives is to help investors identify the effects (operational, supplier-related, reputational and legislative) and exposure to deforestation within their investment portfolio."

³⁵ Note that nearly all entities involved in unconventional oil and gas activities are classified as 'non-adapting', based on their exposure and management, irrespective of their share of revenues in unconventional oil and gas activities. In exceptional cases, a slightly longer phaseout pathway may be considered if entities have trustworthy phaseout plan for their unconventional oil and gas activities and take high quality environmental damage prevention measures.

communities, targets related to land use, adequate environmental and social impact assessments.

- may be classified as ‘positive impact’ if they deliberately make positive contributions to the preservation, recovery or restoration of land, through mitigation practices such as regenerative agriculture, sustainable land management, agroforestry, or restoration of ecosystems such as forests and peatlands.

Special criteria have been adopted for the following challenges and sub-sectors:

Genetically Modified Organisms (GMOs)

The European Union has introduced strict regulations on the use of GMOs in food and animal feed. In the EU, entities are required by law to state whether their products consist of or contain GMOs, or DNA or protein resulting from genetic modification. Entities are expected to comply with these EU regulations to assure global food safety. We consider it to be best practice if entities have implemented policies to ensure that countries, if they trade in products containing GMOs, are provided with the necessary information to make well-informed decisions before agreeing to import such organisms.³⁶

Land Grabbing

Land grabbing refers to dubious industrial and commercial land acquisitions. These deals are usually driven by international investors looking to buy up land, often for agricultural purposes but also for extractives, power generation projects and forestry. Land grabbing is frequently accompanied by human rights violations and has a major impact on the local environment. Large areas of land are sold as ‘uninhabited land’, while entire communities that depend on small-scale agriculture live on this land. We are not involved in the direct purchase of agricultural land but could become indirectly involved through investments in international entities. We demand that entities that are involved in land acquisitions have a sound policy, conduct due diligence, and report on these matters in a transparent way. In this respect, we pay special attention to vulnerable groups such as indigenous peoples, women and children, and expect that entities apply relevant standards and frameworks such as those from the Farmland Principles, Forest Stewardship Council, Roundtable on Sustainability and Biomaterials, Roundtable on Responsible Soy, the Roundtable on Sustainable Palm Oil, the seven priorities as laid out by the World Commission on Dams and EITI.

Extractives, Minerals and Mining Industries

The extractives, minerals and mining industries comprise entities that are engaged in the oil and gas sector and metals and mining sector, including gold and other minerals. These

entities play an important role in countries that depend on their natural resources’ wealth. They may stimulate the local and national economy, reduce poverty and strengthen the country’s position in the global economy. At the same time, the sector has relatively high risks in relation to human rights violations, environmental risks and corruption. We therefore attach great importance to a strict selection strategy in this sector. We demand from entities in these industries to deal with the environment, human rights, working and living conditions and transparency responsibly.

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Land grabbing is frequently accompanied by human rights violations and has a major impact on the local environment.

In step 1 of our screening procedure, discussed in chapter 2 of this document, we describe which controversial environmental activities or corporate behaviour entities in the extractives, minerals and mining industries may be considered for exclusion. In addition, for these industries, all levers distinguished in step 2 of the screening framework are material. Relevant environmental topics relate to energy consumption and greenhouse gas emission, their water use and management of tailings dams, and the management of ecosystems and their restoration after closing and dismantling of the mines, production facilities or exploration sites. Industries in these sectors are supposed to use the best available technologies to minimize the chance of accidents and to manage waste responsibly, beginning with a sound environmental policy and an operational environmental management system. Social and governance topics relate to preventing human and labour rights violations of employees, the presence of sound health and safety measures, the presence of contingency plans for crisis situations, guaranteeing indigenous rights, respecting the principles of free, prior and informed consent (FPIC) and preventing as much as possible (forced) relocation of local communities. We expect these entities to report according to GRI guidelines (including the sector-specific substitutes), to embrace the Extractive Industries Transparency Initiative (EITI) or the Initiative for Responsible Mining Assurance (IRMA) and be transparent about their policies to mitigate the environmental and governance risks.

³⁶ For this, see the Cartagena Protocol on biosafety, a supplement to the Convention on Biological Diversity (CBD), which has the objective to protect the potential risks of genetically modified organisms resulting from modern biotechnology.

For the various minerals, the specific certification guidelines for each mineral should be followed where available, such as the Kimberly Process Certification Scheme for diamonds or the IRMA's standards for responsible mining that define good practices for the mining sector. Entities are also expected to pay the taxes that are due in each country in which they operate. If the public administration of a country is weak, it is recommended that entities use the Extractive Industries Review guidelines of the World Bank. The EITI is a multi-stakeholder initiative to increase transparency of the payments extractive entities, such as those in the oil and gas, mining and forestry sectors, make to the governments where the resources are extracted. They are also encouraged to use ICMM's Sustainable Development Framework to develop a sound system of good governance. All these guidelines help to assure that entities that operate in countries with weak governments or in conflict-affected areas demonstrate that they comply with international human rights standards, do not contribute to the conflict and do not cause or contribute to human rights abuses.

Real Estate

For real estate activities, the activity type determines which business drivers are relevant. For real estate construction, the materials used and the quality of the buildings constructed result in a large environmental footprint. But their human and social capital policies also have an impact on their employees and the communities in which they operate. Real estate is one of the large energy users and therefore responsible for a substantial part of the global greenhouse gas footprint. Moreover, the quality and design of offices and houses impacts health and well-being of its users. In addition, real estate rental agencies, through their policies, have an impact on the (urban) living environment and on social cohesion.

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Real estate is one of the large energy users and therefore responsible for a substantial part of the global greenhouse gas footprint.

Real estate and construction industries providing materials for real estate and infrastructure development, are expected to act responsibly, comply with the increasing strictness of real estate construction norms, apply novel techniques and new materials that allow for more sustainable production methods and, if available, use sustainable and certified materials. We expect that real estate construction entities apply the best available technologies and materials for their activities and are transparent about their sustainability policy, for instance through a sustainability report according to the GRI guidelines and the relevant supplements. In line with this, we expect these entities, for instance, to use recycled and recyclable materials, use FSC certified wood, and operate according to the principles of the Cement Action plan of the Cement Sustainability Initiative. Our land grabbing policy, described above, also applies to the real estate sector implying that real estate developers and owners respect the rights of local communities and tenants.

Newly constructed buildings - especially in the EU, but gradually also in other countries - should be energy neutral and maintenance of existing buildings should improve their energy efficiency. New, redeveloped and renovated buildings are expected to score as high as is feasible for the type of building on real estate sustainability certification schemes such as BREEAM and on the EPC energy efficiency labels. When designing buildings, entities are expected to allow for flexibility in the tenants that can make use of a building and allow for the possibility that the functional use of a building changes over time when societal demands change.

3.6. Materials use and waste management

3.6.1. Background

The materials sector plays a vital role in our economy. Yet, producers of metals, chemicals, construction materials, steel, and paper and forest products are among the main contributors to several of the global environmental challenges and health problems. The sector has high carbon emissions and uses large amounts of water. They also substantially contribute to air, soil and water pollution during production and most materials end as waste after use. Plastics pollution but also e-waste and other waste streams contribute to a broad range of environmental and social problems. If not properly managed, the materials sector negatively contributes to several of the planetary boundaries and social foundations. Yet, the sector also plays a vital role in the transition to a sustainable society, for which large amounts of materials are needed or that requires the transition to cleaner or bio-based materials.

Several developments are expected to change the materials value chain in the decades to come.

- **Stricter regulations:** An existing array of chemicals and hazardous waste regulations already leads to changes in the industry and to the phase-out of controversial chemicals. Several countries are currently tightening their chemical safety regulations, such as China, South Korea and Turkey. They realise that the benefits of pollution control outweigh the costs.
- **Plastic pollution:** Public attention to the plastic waste problems is expected to impact the plastics sector. Over 60 countries have passed regulations to reduce plastic waste and several cities and states have banned single-use plastics. A growing number of entities – especially related to food, beverages, office supplies, consumer goods and packaging – try to reduce their plastics use or search for alternative materials. This is likely to have repercussions throughout the global materials value chain, but it also leads to new opportunities, especially for plastics recycling and for biodegradable and bio-based plastics.
- **Climate change:** The materials sector is among the main contributors to greenhouse gas emissions. Some of the materials sub-sectors have hard-to-abate technologies, but nevertheless several steel and cement producers are already switching to hydrogen or electricity-based technologies and chemical companies are searching for biobased alternatives. These innovations will not only reduce carbon emissions, but also air, soil and water pollution.
- **Consumer concerns & litigation:** Consumers become more concerned about the health and environmental effects of hazardous waste, plastic beads, carcinogenic or toxic additives in plastics or carcinogenicity of pesticides, to name a few concerns. This leads to more examples of litigation. Increasingly, consumers and communities go to court to hold companies responsible for environmental and health impacts caused by their products and production methods. Recent examples include lawsuits related to health and environmental impacts caused by the use or emission of PFAS, Glyphosate or Neonicotinoids but also related to companies whose production facilities cause air, soil and water pollution.

- **Circular economy:** The circular economy creates opportunities for the materials and the waste management sector. Growing awareness of the magnitude of materials scarcity, the waste problem, stricter regulations and new market demands create a shift from seeing waste as a burden to seeing waste as an economically valuable resource. Especially for electronic waste, expected scarcity of raw materials creates new incentives to recycle and redesign products. It also creates opportunities for innovations in green technologies and circular business models. The materials sector comes with innovations in coatings and (bio-based) materials to improve efficiency, material durability and recyclability. Moreover, the European Commission' Circular Economy Action Plan promotes recycling, refurbishment, re-use, resource use reduction or product redesign.

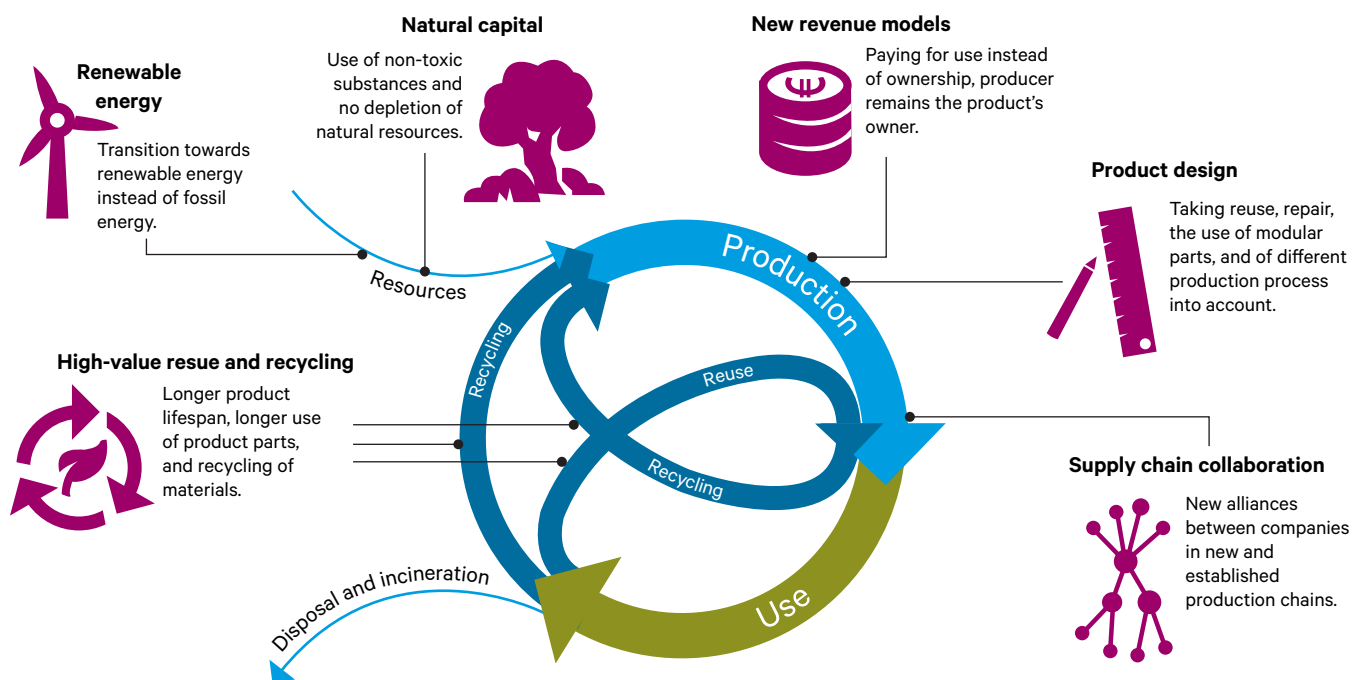
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Several countries are currently tightening their chemical safety regulations, such as China, South Korea and Turkey.

3.6.2. Classifying entities

As several sustainability challenges are becoming increasingly material for the materials sector, we aim to move towards a circular economy by 2050. For this, we expect the entities in which we invest to adapt towards a circular business model, i.e. a business model focussing on reducing, reusing and recycling materials and preventing as much as possible (hazardous) waste problems. Cardano monitors whether entities make the necessary adaptations to their business model. Figure A2 provides evidence of the possible adaptations entities can make to become more circular.

Figure A2: Elements of a circular economy.



Source: <https://themasites.pbl.nl/circular-economy/>

We measure how entities are exposed to topics related to materials use and waste management as well as their capacities to manage these risks. We consider exposure and management for four topics:

- **Controversial material sourcing and procurement:** related to factors such as failure to respect the human and land rights of the communities in which the entities operate or indigenous or minority groups affected by the operations
- **Pollution and hazardous waste:** this refers to the risk of incurring liabilities associated with pollution, contamination, and the emission of toxic and carcinogenic substances and hazardous waste during the life cycle of the product;
- **Waste management, including plastic and electronic waste:** this refers to the risks related to liabilities associated with (micro) plastics, packaging materials, and (electronic and plastic) waste that impact ecosystems and human health, if not managed properly;
- **Chemical safety:** this is related to health risks incurred by producing and using chemicals products and substances.

Exposure

Generally, entities are more exposed to these risks if they use more materials, generate more waste or do not use the best available technologies for reducing these risks. Entities are also more exposed if they operate in countries with stricter regulations or where more litigation cases are brought to court.

Exposure to material controversial sourcing especially depends on:

- Dependency of the operations on raw materials of concern, that originate from areas with concern of violations of human, community, indigenous or minority rights;
- Extent to which materials are sourced or procured from suppliers or subcontractors operating in controversial areas, with concerns of violations of human, community, indigenous or minority rights;
- Dependency of the operations on activities in disputed territories that are in violation of human, community, indigenous or minority rights.

Exposure to pollution and hazardous waste especially depends on:³⁷

- Share of production or use of potentially toxic or carcinogenic materials or (by)products that are harmful to the environment and human health;
- Share of activities or products causing air, water or soil pollution and generate (hazardous) waste;
- Share of operations and sales in regions with stringent or evolving chemicals regulations.

Exposure to waste management especially depends on:

- Use and production of single-use plastics;
- Production of electronic and high-tech products;
- Share of operations and sales in regions with stringent or evolving waste management regulations.

Exposure to chemical safety especially depends on:

- Production or use of chemicals or products known as substance of concern;
- Share of operations and sales in regions with stringent or evolving chemical safety regulations.

Management

Management capacities relate to the presence of targets, strategies or programs and track records of reducing emissions and waste. It also relates to progress in making the transition towards a circular business model, that is characterised by policies to reduce or reuse materials and waste. Entities scoring high on management have made commitments to mitigate environmental pollution risk and have governance structures in place to reduce risk. Entities lacking programs or policies to reduce or control these substances and have experienced substantial incidents of contamination have a lower adaptive capacity and therefore a lower management score. Entities taking the opportunities offered by clean technologies, biobased materials, using alternatives for plastics and managing their waste, usually receive a higher management capacities score. The information for measuring exposure is obtained from an external data provider. As data on circularity is still scarce, we complement the assessments with information from external studies and NGOs.³⁸

To be more concrete, management of material controversial sourcing especially depends on:

- Policies, certifications and standards that address concerns on sourcing and procurement of controversial raw materials, including issues related to conflict minerals, ethical business conduct, gender equality, processes to audit suppliers, civil liberties and freedom of speech, respecting indigenous peoples and other groups' land rights;
- Code of conduct addressing forced labour, child labour, hours, minimum wage, anti-discrimination, use of security forces, and health & safety issues related to sourcing and procurement of controversial raw materials;
- Number of controversies with regards to human and labour rights violations related to material sourcing.

Management of pollution and hazardous waste especially depends on:

- Policies, programs, management systems and demonstrated performance to control toxic and carcinogenic by-products from operations;
- Compliance with international agreements, including
 - the Stockholm Convention on the production and the use of hazardous or toxic substances (POPs),
 - the Montreal Protocol on the production and the use of substances that deplete the ozone layer,
 - the Rotterdam Convention on trade in chemicals and chemical waste,
 - the Basel Convention on trade in chemicals and chemical waste,
 - the REACH Directive and the US Toxic Chemicals Act of 2011 on the use of chemicals suspected to be harmful to the environment and health;
- Disclosure of information about trends in environmental impacts and chemical footprints of themselves and their role in the supply chain;
- Employment of the best available technologies, protocols, process improvements and certification systems (e.g. Hazpower and ISO 14001) to control and reduce the toxic emission to soil, water, and air.

³⁷ Note that the topics considered in the exposure score include the mandatory waste related Principal Adverse Indicators set out in the SFDR.

³⁸ This information is obtained, for instance, from the Basel Action Network, the Chemical Footprint Project, the Plastic Pollution Coalition, the Ellen McArthur Foundation, ChemScore and As You Sow. If new information comes available or if new approaches come available to measure exposure to and management of chemicals and waste management, these will be included in the screening approach. Cardano also participates in the PRI Plastic Investor Working Group in order to build knowledge and better understand how plastics fit within the circular economy developments.

Waste management especially depends on:

- Policies, programs and demonstrated performance to reduce waste production or to innovate in packaging, waste management, recyclability and recycling;
- Disclosure of information about trends in packaging use, waste production and waste handling;
- Employment of the best available technologies (BAT) or process improvements according to the precautionary principle to improve waste management (e.g. of plastics and electronic waste);
- Adoption of a business model that is based on circular economy principles, considering for instance packaging and waste minimization, recovery, recycling, re-use and redesign of products and processes.

Management of chemical safety especially depends on:

- Policies, programs and demonstrated performance to phase out substances of concern and introduce viable alternatives;
- Implementation of chemical safety related programmes, certification schemes, protocols and standards for all stages of the life cycle of chemical substances;
- Disclosure and transparency about impacts of substances or products used or produced;
- Investments in green chemistry and clean technologies;
- Formal processes to apply life cycle assessments and strict environmental and health standards in design of new products or substances.

Classification

Based on exposure and management scores, entities are classified into one of the categories of the Sustainable Investment Framework.



3.7. Human capital management

3.7.1. Background

Human capital is “the value embedded in individual people, which concerns their knowledge, skills, competencies and attributes. It facilitates the creation of personal, social and economic well-being”.³⁹ In a business context, human capital concerns issues related to labour and union rights, employee health & safety, working conditions, career development opportunities, and inclusive and diverse employer practices, including gender equality. Entities impact and depend on human capital. Human capital management is key for achieving several of the SDGs, including those relating to poverty, health and well-being, education, equality, decent work and responsible consumption and production.

Human capital is increasingly material for entities:

- **Technological developments:** Due to Artificial Intelligence (AI), robotics and other human-machine interaction technologies, existing tasks currently done by humans will be increasingly taken over by machines. This can lead to a large-scale decline in some roles, which in turn causes trade-offs in investing in automation, re- or up-skilling of current employees or hiring new employees with skills in new technologies. At the same time, this development can lead to a large-scale growth in new products and services.
- **Changing geography of operations and sourcing:** Job location decisions are increasingly driven by the availability of skilled local talent and labour costs. In several countries we see rising standards on labour laws and working conditions such as minimum wages, health and safety, equality and diversity. This is expected to create a more equal level playing field for entities operating in the respective countries.
- **Flexible and global workforce mobility:** Workforces increasingly consist of foreign workers that are employed through a variety of contracts. This requires rethinking and managing their rights, taxation and social security issues over time and in different contexts. This may make it challenging for entities to implement human capital policies in line with changing stakeholder expectations.
- **Transparency:** There is a trend towards more transparency in reporting and scrutiny by stakeholders on human and labour conditions of entities and their supply chains (e.g. Behind the Brands campaign by

Oxfam, Access to Medicine Index, Access to Nutrition Indices, KnowTheChain Benchmark, and Corporate Human Rights Benchmark). Challenging in this regard is the size and global presence of entities, the complexity of the supply chain and the complexity of joint ventures and minority owned entities for which entities hold responsibility but may not have direct control. This makes it difficult to manage and monitor codes of conduct, HR policies and other policies promoting human capital development across borders and value chain activities.

Entities increasingly see the risks and opportunities related to their human capital management. Those that are lagging, may face disruptions instigated by strikes, penalties or compensation payments related to accidents or mistreatment of employees or higher recruitment and training costs due to higher turnover. They may lose their license to operate or experience brand value damage. Also those who have high risks of human capital controversies in their supply chain, may lose their license to operate if supplier auditing is lagging. Those managing their human capital well can position themselves as an attractive employer that provides working conditions in line with decent work, diversity and inclusiveness principles, as well as training and development opportunities that benefit long-term employability. They can benefit from increased productivity, reduced costs and enhanced license to operate.

Not all dimensions of human capital management are equally material for all sub-sectors. For example in manufacturing sectors like extractives the issue of health & safety is more material than in services sectors. Also, topics related to employee engagement and career development are more important in technology-intensive sectors, given the scarcity of highly skilled people. For sectors with low-skilled workforces, issues related to standard working conditions are more important.

3.7.2. Classifying entities

In our classification procedures, we consider whether an entity’s human capital management practices create material risks or opportunities and/or whether it fits in a fair society. For this, we consider how management impacts quality of life for employees and society, whether entities pay a living wage to employees and how they contribute to improvements in human rights, labour rights and poverty alleviation.

We analyse human capital management on the following four dimensions, for those sectors for which they are material and impactful.

39 Keeley, B. (2007). Human Capital, How What You Know Shapes Your Life. OECD Publishing.

- **Labour practices**, such as working conditions related to labour and union rights, remuneration above living wage levels, working hours, and employee treatment, including rights of employees with disabilities and/or of minority groups. Issues on this dimension can lead to workforce strikes or low job satisfaction and therewith production disruptions or poor quality production, which comes with associated costs.
- **Employee health & safety**, which concerns managing accidents, implementing health & safety (H&S) programs and monitoring contractors' performance on H&S.⁴⁰ Poor performance on this dimension can lead to production disruptions and litigation or compensation costs.
- **Supply chain labour standards**, which concerns integration of ILO standards in procurement policies, as well as treatment of employees in the supply chain, monitoring and engagement of suppliers on working conditions, anti-discrimination policies, and labour rights and H&S policies of subcontractors. Issues on this dimension can result in production disruptions or consumer bans with associated reputational risks, which can increase costs.
- **Employee training and development**, including training and development programs, employee engagement programs and anti-discrimination and diversity policies. Anti-discrimination and diversity policies should apply e.g. to the workplace, recruitment and migrant workers. Poor management can lead to higher turnover rates, which in turn can increase recruitment and training costs. Also, it can lead to lower productivity as employee skills may no longer match with what is required given new technologies.

Data on human capital exposure and management come from ESG rating data complemented with data from for instance the Corporate Human Rights Benchmark, Workforce Disclosure Initiative Survey, Access to Medicine, Access to Nutrition Indices, Platform Living Wage Financials, and Equileap.

Exposure

Exposure to potential labour practices issues depends on:

- Size and location of workforce;
- Degree of labour intensity;
- Corporate restructuring or layoffs.

Exposure to potential employee health & safety issues depends on:

- Operations in locations with high accident rates;
- Operations in sectors with high injury or accident rates.

Exposure to potential supply chain labour standards issues depends on:

- Supply chain in locations with poor labour standards;
- Brand exposure to public scrutiny.

Exposure to potential employee training & development issues depends on:

- Dependence on high-skilled workforce;
- Involvement in restructuring with negative consequences for employee turnover.

Management

Management of labour practices depends on:

- Remuneration and provision of benefits, including payment of a living wage and application of a maximum of working hours;
- Access to collective bargaining and associations, including procedures on how to deal with employee complaints and to solve conflicts;
- Discrimination, equality and diversity policies;
- Employee engagement programs;
- Employee training & development programs;
- Restructuring policies;
- Labour-related controversies, e.g. reductions in benefits, mistreatment of employees, controversies over wages and hours, wrongful termination.

Management of employee health & safety depends on:

- Quality of H&S policies and targets and compliance of H&S policies with relevant standards (such as ISO certification guidelines);
- H&S risk management, training, supply chain management and controversies, e.g. workplace accidents in direct operations.

⁴⁰ This includes compliance to the Fundamental Principles on Nuclear Safety of the International Atomic Energy Agency. IAEA (2006). Fundamental Safety Principles – Safety Fundamentals No. SF-1. International Atomic Energy Agency, Vienna.

Management of supply chain labour standards depends on:

- Supplier code of conduct requirements, training and audits;
- Actions for non-compliance of suppliers with code of conduct;
- Supply chain labour standards controversies, e.g. supply chain issues related to overtime, inadequate pay, union and discrimination on gender, race or ethnicity.

Management of employee training & development depends on:⁴¹

- Talent development and training programs;
- Non-financial incentives;
- Establishment of grievance procedures for handling employee complaints, conflicts and violations;
- Employee satisfaction;
- Controversies related to
 - Labour management: working hours, wage, contract termination and other employee violations;
 - Collective bargaining and unions: anti-union activities, strikes, lockouts and breaches of union contracts;
 - Discrimination and workforce diversity: discrimination based on gender, race or ethnicity, gender pay differences, or instances of verbal, physical or sexual harassment.

Classification

Based on these factors, entities are classified into one of the categories of the Cardano Sustainable Investment Framework. Entities that do not comply with the human capital dimensions that are already part of the screening in step 1 are classified as ‘harmful’ or ‘non-complying with international standards. In relation to this, entities are required to operate in line with among others the UN Global Compact principles, UN Guiding Principles for Business and Human Rights, and the International Labour Organization’s fundamental principles related to child labour, forced labour, union and collective bargaining and discrimination. These minimum requirements apply to entities’ direct operations and supply chains.

Entities are typically classified as ‘non-adapting’ or ‘at-risk’ if they insufficiently prepare upcoming regulations or do miss out on changes in social norms and views on what it entails to maintain your license to operate. Also entities structurally involved in severe controversies will be classified as ‘non-adapting’ or ‘at-risk’ and can be excluded for that reason. Entities may typically be classified as ‘sustainable’ if they pay a living wage to all employees, provide a safe working environment for all, and offer development and secondary benefit programs to their employees.

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AI is developing fast, leading to new ethical and regulatory discussions on its use and uncertainties on how it will affect businesses.”

3.8. Social capital management

3.8.1. Background

Broadly speaking, social capital is the stock of community’s goodwill and trust acquired by an organisation over the years, through its understanding and addressing of the concerns and priorities of its stakeholders. In a business context, social capital management relates for instance to how entities manage community relations, data privacy, accessibility to basic services, and product safety. Social capital management is becoming more and more material for many entities. To name a few developments:

- **Artificial intelligence:** Artificial Intelligence (AI), robotics and other human-machine interaction technologies will strongly influence the future workforce and relations of businesses to society. AI is developing fast, leading to new ethical and regulatory discussions on its use and uncertainties on how it will affect businesses. New products and services are likely to be developed, changing the way people interact, live, work and do business.

41 Note that the topics considered here include the mandatory Principal Adverse Indicators set out in the SFDR on the unadjusted gender pay gap and board gender diversity.

- **Diversity, equity & inclusion (DEI):** DEI is increasingly important for businesses. Several studies point at the positive impact of more diversity on entity performance. But DEI-related controversies may also damage the license to operate of entities and lead to reputational damages or consumer bans.
- **Supply chain vulnerability:** the COVID-19 pandemic has shown the vulnerability of economies to supply chain disruptions. The global character of supply chains increases risks that entities are unintentionally involved in human rights abuses or environmental controversies, leading to reputational damage and legal actions. Regulatory requirements and consumer awareness on supply chain issues are increasingly becoming important.
- **Controversial sourcing:** The transition towards a low-carbon society requires large amounts of minerals and raw materials, many of which originate from emerging markets. Controversies related to human and labour rights, local communities and indigenous people increasingly create risks for entities.
- **Transparency:** There is a trend towards more transparency in reporting. Consumers, authorities and NGOs increasingly seek transparency and address negative effects of economic activities, underlining the current trend of enhancing e.g. human rights standards, respecting land rights or gender equality reporting.

These developments will influence entities' behaviour and financial results, depending on how well the entities manage their social capital and are thus exposed to or protected against these trends.

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The methodology for measuring social capital targets is yet in its infancy and relatively few measurement tools are available.

3.8.2. Classifying entities

We consider how an entity's social capital management practices create material risks or opportunities and/or whether it fits in a fair society. For this, we evaluate for example how they address human and community concerns in their policies, processes and procurement, and what they do to prevent product quality and safety or data and privacy security problems. To improve transparency and assessment procedures, we contribute to working groups and initiatives to further develop targets and measures related to social capital management.

We cluster social capital management issues in five dimensions:

- **Product safety & quality:** related to concerns about product quality and risks of unsafe products leading to recalls, warranty payments and controversies
- **Data & privacy security:** related to controversial use of personal data, practices to control data collection and use, and strength of data security management
- **Access to and affordability of communication, health care, nutrition and finance:** related to practices, products and distribution channels that either restrict or improve access to and affordability of basic services such as health care, food and financial services
- **Community relations:** related to factors affecting local communities in which the entities operate, through the disturbance caused, the distribution of benefits and impacts on human rights.
- **Animal welfare and factory farming:** related to how entities manage risks and impacts related to animal testing, the use of fur and factory farming – see also section 2.2.2.

For the first four dimensions, we identify how exposed entities are and how well they manage these. For animal welfare a different approach is followed, as discussed at the end of this section. The methodology for measuring social capital targets is yet in its infancy and relatively few measurement tools are available. We therefore use a combination of sources and qualitative scores to gain insight into risk exposure and management.

Exposure

Exposure to product safety and quality issues depends on the:

- Extent to which entities produce products that experience higher rates of product safety and quality incidents or have higher associated liabilities.

Exposure to privacy and data security issues depends on the:

- Extent of operations in countries with stringent or evolving regulations on data security and privacy;
- Extent of operations involved in collecting and handling personal data and with high risk of experiencing data security problems.

Exposure to issues related to access and affordability to communication, health care, nutrition and finance depends on:

- Extent of operations in markets that are underserved or that are characterised by imperfect competition;
- Extent to which lack of skilled staff or lack of proper infrastructure create risks of creating hurdles to access to services.

Exposure to community relations issues depends on:

- Extent to which an entity is exposed to controversies related to human rights issues;
- The physical footprint of the entity as well as potential disturbances related e.g. to land and water use intensity, and to toxic emissions produced in the communities in which the entity operates.

Management

Management scores of product safety and quality issues depend on:

- Training, policies on supply chain and sourcing risks, and presence of certifications for supply chain standards such as Rx360
- Presence of policies and procedures related to internationally accepted quality control, product testing, mitigation control, product and process certification (such as the latest ISO certification guidelines including ISO 9001);
- Transparency about incidents, quality performance, recalls & warnings, and codes of conduct on product safety & quality;

- Number of controversies related to product safety & quality.

Management scores on privacy and data security depend on:

- Presence of policies restricting the collection, use and storage of sensitive personal data;
- Transparency about incidents of breaches and the number of controversies related to privacy and data security;
- Transparency about data protection & privacy policies and systems, auditing procedures, employee training, use of widely recognized certificates or standards, technologies used, and allocation of responsibilities.

Management scores on access and affordability to communication, health care, nutrition and finance depend on:

- Controversies related to restricting access to basic services, to providing basic services that are unaffordable to underserved groups or minorities or to discriminating in providing access;
- Presence of policies and targets to serve underserved groups such as children, elderly, women, disabled, specific ethnic groups, low-income, remote areas, and SMEs;
- Performance on the access to medicine index, access to nutrition⁴² benchmark and digital inclusion benchmark;
- Disclosure of activities related to access and affordability of basic services among underserved groups;
- Investments in capacities to advance access and affordability of basic services.

Management scores on community relations depend on:

- Policies related to reducing negative impact on communities and indigenous people;
- Programs and management systems to engage local communities including grievance mechanisms and stakeholder consultation guidelines;
- Programs to improve distribution of benefits including local hiring practices and use of local suppliers;

42 See [Worldbenchmarkingalliance.org](https://www.worldbenchmarkingalliance.org)

- Employee training for the protection of human rights, ethical conduct and reducing violence and conflict, including a commitment to the Voluntary Principles on Security and Human Rights for security personnel.

Classification

Based on the exposure and management scores, entities are classified into one of the categories of our Sustainable Investment Framework. As already discussed in section 2.2, entities not complying with international standards or involved in harmful activities related to social capital management will be classified as ‘non-compliant with international standards’ or ‘harmful’ and therefore excluded from investment. Entities that just comply with social capital related laws and regulations but do not exhibit additional effort to surpass this minimum, are typically the entities labelled as being ‘at risk’. Entities may be classified as ‘adapting’ or ‘sustainable’ if they develop higher standards on social capital management in response to the societal trends and challenges they face in the short-term.

Special criteria have been adopted for the following challenges:

Rights of indigenous people and local communities

The international rights of indigenous peoples are included in several conventions and treaties. In 2007, 146 countries adopted the UN Declaration on the Rights of Indigenous Peoples (UNDRIP). This declaration states that entities need to respect human rights and land rights and must formulate and apply policies to consult with local and indigenous communities to seek Free, Prior, and Informed Consent throughout the entire process of opening, maintaining and closing a mine, oil field, factory, or any land use change. This is to ensure that indigenous peoples have the chance to voluntarily authorise the entity’s activities based on full information. Entities are also expected to put processes in place to enable the remediation of adverse human rights impacts which they caused or contributed to through their supply chain partners and to prevent further incidents.

Entities are also expected to improve equality among stakeholders, independent of gender, and prevent (modern) slavery in all its forms. In that sense, entities are expected to have a policy commitment against gender-inclusive discrimination, sexual harassment and pay inequality and are expected to actively promote equal access of women at all levels among different stakeholder groups, such as employees, clients, subcontractors and suppliers.

Animal welfare and factory farming

We believe that human interaction with animals should occur in a responsible and prudent manner. Treatment of animals in a humane way is the standard by which we assess an entity’s policies, practices and behaviour. The principles discussed in section 2.2.2 contain ethical principles related to animal testing, livestock farming and fisheries. Besides, we expect relevant entities to:

- respect the five freedoms of animals;
- comply with animal welfare requirements through certification schemes;
- use more plant-based proteins in products;
- curb excessive use of antibiotics;
- respect the 3Rs (replace, reduce and refine) for ethical use of animals in product testing and research;
- act in accordance with the REACH regulation, implying that 1) animal testing may only be used as a last resort, 2) alternative methods should be implemented, 3) data must be shared and 4) research must be performed regarding test proposals
- use the international Business Benchmark criteria for farm animal welfare (BBFAW) to improve animal welfare by, for example, replacing confined housing systems with cleaner, safer and more spacious alternatives, or restricting animal transport times limits.

In addition, we expect entities to discontinue any business activities related to the production and trade of fur and exotic leather and switch to non-animal products or to by-products of the meat and dairy industry. The above requirements do not only apply to the entity itself, but also to subcontractors and suppliers throughout the supply chain.



Treatment of animals in a humane way is the standard by which we assess an entity’s policies, practices and behaviour.

Entities active in the animal husbandry sector and in particular factory farming should respect animals. Factory farming is defined as a system of rearing livestock using highly intensive methods, by which poultry, pigs, or cattle are confined indoors under strictly controlled conditions. Cardano also includes cage and crate confinement-based systems in this definition. Respecting animals means that an entity which does not have an animal welfare policy or is not transparent about the way animals are treated, is not acting in line with expected adaptivity. One way to adhere to this, is to implement the Responsible Minimum Standards (RMS) of the FARMS Initiative.⁴³ This initiative provides guidance on how farmers should raise, transport and slaughter several farm animals. Also, in order to encourage livestock farms and fisheries to gradually switch to more humane practices and production, it is expected that relevant organisations act in accordance with the following guidelines;

- UN Straddling Stocks Agreement, 1982
- Aquatic Animal Health Code, 1995
- FAO Code of Conduct for Responsible Fisheries, 1995
- International Principles for Responsible Shrimp Farming, 2006
- Sustainable Agriculture Standards, 1997
- Terrestrial Animal Health Code, 1968

On a global level, the livestock sector is responsible for approximately 14 percent of the global GHG emissions, while 85 percent of the world's soy production is used for animal feeds, and 80 percent of the antibiotics in the US is being used for animal factory farms. Given these facts, there are significant investment and sustainability risks linked to the factory farming sector. The links between the poorly performing entities in the sector and climate change, biodiversity loss and zoonotic diseases are inevitable. Also, the working conditions of meat factory employees are often poor and not in line with fair labour standards. Finally, the heavy reliance of the sector on government subsidies makes the sector vulnerable, potentially leading to significant sustainable, ecological and animal-related business risks. These items are therefore included in the screening of entities and in the assessment of their related performance.

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**On a global level,
the livestock sector
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percent of the global
GHG emissions,...**



43 <https://www.farms-initiative.com/> Comparable schemes are acceptable if they are of the same quality and with the same level of ambition as the two schemes mentioned here.

3.9. Organisational behaviour & integrity

3.9.1. Background

Organisational behaviour and integrity are financially material for most entities.⁴⁴ Lagging corporate behaviour and integrity policies, lack of tax transparency and non-compliance with (inter)national laws and regulations regarding competition, corruption, fraud and bankruptcy increase the risk for strikes, production disruptions, additional costs in the form of fees, loss of sales/ services and fines, and the loss of a license to operate. Organisational behaviour and integrity relate to topics such as board composition, remuneration, anticompetitive behaviour, tax avoidance, corruption, fraud and cyber security. All these matters influence public opinion, which is essential to the success of an organisation and their license to operate. Organisations are increasingly aware of the fact that they should not only increase shareholder value but that they also play a role in society to maintain their client base. Good governance and business integrity function as the internal compass for the corporate behaviour of an entity. By giving the example of good behaviour, the entity also creates its internal culture, attracting employees with similar behaviour and wishes. Integrity has become more important to corporate leadership since the financial crisis. Misbehaviour by entities immediately causes higher costs, reputational damage and loss of customers. Managers and Board members are increasingly held accountable for misbehaviour by the entity, sometimes via personal liability. Lost trust reduces investor and consumer loyalty, impacting the entity's performance.

Corporate behaviour and integrity are regarded essential for entities in all sectors. However, due to the nature of some sectors or business models and due to regulatory differences and differences in ethical norms between regions, some topics are more relevant for specific sectors. For instance, business ethics & fraud – dealing with regulatory risks associated with fraud, insider trading or executive conduct – is financially material for entities in the pharmaceuticals or health care, extractives & minerals processing, financials, infrastructure, real estate, resource transformation, services and transportation sectors. The risks related to 'anti-competitive practises' – including price fixing or unjust manipulation – is more material for the extractives and minerals processing, services, technology & communications and transportation sectors. And risks or losses related to market access restrictions due to corruption scandals and bribery, or due to political and/

or social instability such as civil unrest or poor human right practises, is financially material to all entities operating in countries susceptible to corruption or where regulatory systems are weak.

3.9.2. Classifying entities

We believe that strong organisational behaviour and integrity levels contribute to the long-term financial performance of entities and the stability of communities. The guidelines as formulated by the UN Global Compact and the OECD Guidelines for Multinational Enterprises are minimum requirements – see also section 2.2. On top of that, we classify entities based on their transparency about their corporate behaviour & integrity. More transparency is expected to improve entity behaviour and prevent integrity issues from happening.

We analyse corporate behaviour and integrity on 5 dimensions.

- **Corporate governance:** related to board composition, pay practices, ownership, voting & shareholder structure and accounting practices & corporate transparency.
- **Business ethics:** extent to which entities are involved in ethics issues such as fraud, executive misconduct, money laundering or insider trading.
- **Anticompetitive practices:** extent to which entities are involved in practices such as price fixing, abuse of market power to limit competition, cartel agreements, collusion or price discrimination.
- **Corruption and instability:** extent to which entities are involved in bribery and corruption scandals or run risks due to political or social instability.
- **Tax transparency:** extent to which entities provide clarity about their corporate income taxes

For each entity, we assess how entities manage these topics. A high score implies that entities are managing the risks related to corporate behaviour & integrity issues well, can adapt to the changing requirements to corporate behaviour and are transparent about this, e.g. by reporting according to the GRI guidelines (including their sector-specific supplements) or other sector-specific transparency initiatives. The following indicators are considered for determining an organisational behaviour & integrity score.

⁴⁴ Eccles, R.G., I. Ioannou and G. Serafeim (2014). The impact of Corporate Sustainability on Organizational Processes and Performance. *Mgmt. Science*, 60 (11).
Giese, G., Z. Nagy, and L.E. Lee (2020). Deconstructing ESG ratings performance: risk and return for E, S and G by time horizon, sector and weighting. MSCI ESG Research.

Management of corporate governance⁴⁵

- Independence of the board from management, directors' qualifications;
- Board: Conflict of interest, no skills diversity, audit oversight, etc.;
- Pay: Remuneration fairness, transparency;
- Shareholder structure: Controlling shareholders, voting process, limits;
- Accounting practices: Revenue and expenses, auditor reports, internal controls, late filings.

Management of business ethics

- Business ethics policy, including policies on oversight, whistle blower protection, independent monitoring of ethics policies, and employee training;
- Business ethics policies for suppliers and contractors.

Management of anti-competitive practices

- Controversies on anti-competitive practices, price fixing, cartel agreements or collusion.

Management of corruption and instability

- Controversies on bribery & corruption, human rights & human liberties issues and community impact;
- Association with corrupt practices (based on Transparency International and World Bank data);
- Policy on fraud, money laundering, misleading claims or insider trading;
- Commitments to international ethics and anti-corruption standards.

Management of tax transparency

- Controversies related to tax rates and tax gaps;
- Extent to which entities are transparent, including whether they include country-by-country reporting in their disclosures;
- Extent to which entities pay taxes that are due and receive subsidies in the countries in which they operate;

- Estimated Effective Tax Rate determined by the actual tax paid by the entity's income before tax, its level of transparency and its performance on tax practices.

Section 2.2.1 already discussed that entities are classified as 'non-compliant with international standards' if they are involved in corruption as defined in several international conventions and guidelines. Entities are classified into one of the remaining categories of our Sustainable Investment Framework based on whether their management scores are higher or lower than the thresholds defined per category. Entities that move beyond complying with (inter)national laws and regulations towards managing risks (transparent, high level of disclosure, policies and systems) may qualify for the categories 'adapting', 'sustainable' or 'positive impact'.⁴⁶

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We carefully assess behaviour of the financial institutions in which we invest. This not only refers to their corporate behaviour, but also to the environmental impacts of their investments...

Special criteria have been adopted for the following sectors:

Financial Sector

Due to involvement in numerous controversies and scandals, the financial sector is under scrutiny. We carefully assess behaviour of the financial institutions in which we invest. This not only refers to their corporate behaviour, but also to the environmental impacts of their investments and their dependency on human and social capital management. The financial sector is sensitive to regulatory changes and consumer concern. They must increasingly monitor the origins of financial flows, face data privacy and data security risks, and are expected to hold high ethical norms, considering for instance financial crime risks, anti-money laundering and counter terrorist financing. In

⁴⁵ When analysing corporate governance management, we consider to a certain extent regional and cultural differences in how boards should operate in the best interest of their company, shareholders and other stakeholders.

⁴⁶ Thresholds have been set such that entities that are qualified at least as 'adapting' for the organisational behaviour & integrity driver, do comply with the good governance requirements as laid down by the SFDR.

addition, they are called to provide transparency about the impacts of their investments to society and the environment, such as their investments in high-carbon or deforestation activities.

We carefully consider how financial institutions prepare for the changing risks they face. If necessary, we exclude financial institutions or engage with them to initiate improvements. As part of the screening of financial institutions, we consider to what extent they:

- comply with the Wolfsberg Principles, Equator principles or UN Principles for Responsible Investment (UN PRI);
- disclose their taxes using country-by-country reporting;
- have an investment policy regarding sensitive sectors and crucial themes, based on international treaties and conventions;
- adhere to the recommendations of the Task Force on Climate-Related Disclosures (FSB TCFD).

Pharmaceuticals

The pharmaceutical sector plays an important role in society for improving life expectancies and quality of life. Yet, a large part of the population lacks access to affordable health care. The Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights have defined a standard as to what the right to health means. In addition, the SDG 3 refers to ensuring healthy lives for all. Pharmaceutical entities, governments and healthcare organisations all play an important role in realising this. But the pharmaceutical industry is also the

cause of many scandals, related for instance to tax evasion, neglected side effects of medicines with large social impacts, bribery, excessive price setting, anti-competitive behaviour and misconduct regarding animal testing.

We carefully assess behaviour of the pharmaceutical entities in which we invest. We expect pharmaceuticals to have effective policies and processes in place to contribute to accessible and affordable health care for all. They are expected to act according to the Principles for Responsible Supply Chain Management as formulated by the Pharmaceutical Supply Chain Initiative (PSCI). This implies that they are expected to conduct their businesses in an ethical manner, uphold the human rights of their employees, provide a healthy and safe working environment, operate in an environmentally responsible manner and facilitate continuous improvement to their operations and products.

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We expect pharmaceuticals to have effective policies and processes in place to contribute to accessible and affordable health care for all.

4.

Oversight and governance



4.1. Oversight

The Cardano Sustainability Group (CSG) is responsible for maintaining the Sustainable Investment Framework and for implementing it within Cardano's selection and investment processes. Cardano has three committees to manage and implement the Sustainable Investment Policy.

- The Sustainability Policy Committee (SPC) oversees the sustainability policies. It approves changes to the sustainability policy or to the thresholds applied. Every year, the CSG evaluates whether the thresholds and the indicators adopted need updates. New sustainability data points are being developed that may need to be integrated, new scientific knowledge about thresholds or transition pathways comes available that may lead to new insights and the materiality of sustainability themes may change over time. Changes are prepared by the CSG, discussed with the relevant departments within Cardano and finally approved by the SPC.
- The Sustainability Categorisation Committee (SCC) decides on the classification of all investments in line with the Sustainable Investment Policy, which results in decisions on what can be invested by different portfolios and what is excluded. Every quarter, the CSG quantitatively screens the universe, based on the framework and thresholds. Subsequently, they fundamentally analyse all entities that
 - may be excluded because of their 'non-compliant with international standards', 'harmful', 'non-adapting' or 'at-risk' status, to challenge whether the qualitative data correctly reflect their high risks and negative impacts.
 - may be classified as 'sustainable', to evaluate whether they comply with the definition of a sustainable investment according to the SFDR.
 - may be classified as 'positive impact', to evaluate whether they indeed significantly and intentionally contribute to positive impact.
 - may change status because of a change in their quantitative scores, to evaluate whether their change indeed is caused by a change in behaviour or a change in behaviour we expect from entities.

The SCC meets at least four times per year to discuss changes in the investment universe. This process is audited by an external auditor.

- The Investment Committee Sustainability (ICS) focuses on the implementation of the sustainability policies in investment decision-making in line with the Sustainable Investment Policy. They have a vote in the investment rules that incentivise portfolio managers to invest more sustainably and to encourage investments in entities that support the transition.

4.2. Grievance & Remedy

The CSG is responsible for performing due diligence on the entities in the investable universe. They screen on a quarterly basis whether entities in the investable universe comply with all the expectations that have been described in sections 2 and 3. For instance, they evaluate whether entities comply with the principles as described in the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business & Human Rights. They also evaluate to what extent entities are involved in adverse impacts related to human and labour rights, the environment, corporate governance or other adverse impacts to society, either through their own operations or their value chain. For this, investee policies to avoid, prevent and mitigate adverse impacts are investigated. To the extent that the necessary information is available, it is also investigated how entities manage controversies or adverse impacts they have been involved in. For this, it is considered which grievance mechanisms are followed and which remedy actions are taken. The results of the due diligence process, which are approved by the SCC, determine whether the investee company is investible in our direct investments or whether we start an engagement with them. Decisions related to engagements and divestments are communicated through the quarterly Sustainability reports.

“The results of the due diligence process, which are approved by the SCC, determine whether the investee company is investible in our direct investments.”

As an institutional investor, Cardano does not cause or contribute to potential adverse impacts of its investees. We may, however, be linked to potential adverse impacts through our business relationships. Due to these links,⁴⁷ we consider it to be our responsibility to build and exert our leverage to the extent possible to convince investees to take their responsibility and prevent and mitigate adverse impacts where risks may arise. For this, an important component of engagements is to request investees to organise grievance and remedy mechanisms for the various stakeholder groups that may be negatively impacted by actions of the investee company or in their value chains.⁴⁸ In this sense, through engagements and voting behaviour at annual general meetings, we participate in dialogues or mediation processes regarding adverse impacts, as laid down in the OECD Guidelines and UN Guiding Principles. Results and progress of these processes are communicated in our quarterly Sustainability Report and our half year and annual reports.

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Next to directly engaging with the entity, we may also collaborate in industry-wide initiatives targeting certain adverse impact issues...

Next to directly engaging with the entity, we may also collaborate in industry-wide initiatives targeting certain adverse impact issues or sustainability themes and / or stimulate entities to learn from one another. Examples of industry-wide initiatives are related e.g. to living wage, environmental stewardship, plastics use and deforestation. As a last resort, we may divest from entities to stop linkages with persistent adverse impacts. As divestment does not solve the adverse impact, this option is only adopted if engagement proves to be unsuccessful within a reasonable timeframe or if engagement is expected to be unsuccessful from the start.

The due diligence process is the principal way in which we encounter actual or potential adverse impacts. We also invite stakeholders to raise concerns to the CSG regarding involvement of investee companies in adverse impacts that require remedy. New evidence will be evaluated and if the investee is indeed found to violate our Sustainable Investment Framework, action will be taken and discussed with the stakeholders that raised the concerns. As discussed above, potential actions include engagement, voting at shareholder meetings and divestment. Concerns related to our involvement to adverse impacts can also be brought to our attention through the Dutch National Contact Point for the OECD-Guidelines for Multinational Enterprises, which is part of the Dutch Ministry of Foreign Affairs and which is the official Dutch institute to address specific incidents related to the OECD Guidelines. The NCP can assist the involved parties to find a solution to avoid further escalation.⁴⁹

⁴⁷ Due to this link, Cardano is generally not responsible for addressing the adverse impacts itself nor is it expected to provide remedy.

⁴⁸ Grievance mechanisms should be aligned with Principle 31 of the UN Guiding Principles and be legitimate, accessible, predictable, equitable, transparent, compatible with OECD Guidelines and be based on dialogue and engagement with a view to seeking agreed solutions. This also implies that the outcome of any such remedy mechanism should be that the negative impact should be addressed timely and effectively, putting the rights-holders central. For more information, see OECD (2017), “Responsible business conduct for institutional investors: key considerations for due diligence under the OECD Guidelines for Multinational Enterprises”, OECD, or UN General Assembly (2017), “Report of the Working Group on the issue of human rights and transnational corporations and other business enterprises 18-07-2017, A/72/162”, United Nations General Assembly.

⁴⁹ See www.oesorichtlijnen.nl/npc for a description of the NCP procedures.

Appendix

**List of international mechanisms considered
in the entity assessments:**

- Abolition of Forced Labour Convention, 1957 (ILO Convention No. 105)
- Aquatic Animal Health Code, 1995
- Comprehensive Nuclear-Test-Ban Treaty, 1996
- Convention Concerning Occupational Safety and Health and the Work Environment, 1981 (ILO Convention No. 155)
- Convention on Cluster Munitions, 2008
- Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973
- Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, 2001
- Convention on the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, 1972
- Convention on the Elimination of All Forms of Discrimination Against Women, 1979
- Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, 1993
- Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, 1997
- Convention on the Rights of the Child, 1989
- Discrimination (Employment and Occupation) Convention, 1958 (ILO Convention No.111)
- Earth Charter, 2000
- Equal Remuneration Convention, 1951 (ILO Convention No. 100)
- European Union Sanctions policy, 2016
- FAO Code of Conduct for Responsible Fisheries, 1995
- Forced Labour Convention, 1930 (ILO Convention No.29)
- Freedom of Association and Protection of the Right to Organise Convention, 1948 (ILO Convention No.87)
- ILO Declaration on Fundamental Principles and Rights at Work and its Follow-Up (1988, Annex revised 15 Jun 2010)
- Indigenous and Tribal Peoples Convention, 1989 (ILO Convention no. 169)
- IFC Performance Standards on Social & Environmental Responsibility, 2012
- International Covenant on Civil and Political Rights, 1966
- International Covenant on Economic, Social and Cultural Rights, 1966
- International Principles for Responsible Shrimp Farming, 2006
- IUCN Protected Areas Categories System
- IUCN Red List of Threatened Species (CITES)
- Minimum Age Convention, 1973 (ILO Convention No. 138)
- OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, 1997
- OECD Guidelines for Multinational Enterprises, 2011
- Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, 1925
- Protocol I Additional to the 1949 Geneva Conventions, 1977
- Ramsar Convention on Wetlands, 1971
- Right to Organise and Collective Bargaining Convention, 1949 (ILO Convention No. 98)
- Rio Declaration on Environment and Development, 1992
- Slavery Convention, 1926
- Supplementary Convention on the Abolition of Slavery, the Slave Trade, and Institutions and Practices Similar to Slavery, 1956

- Sustainable Agriculture Standards, 1997
- Terrestrial Animal Health Code, 1968
- Treaty on the Non-Proliferation of Nuclear Weapons, 1968
- UN Convention Against Corruption, 2003
- UNESCO World Heritage Convention, 1972
- UN Global Compact, 2000
- UN Guiding Principles on Business and Human Rights, 2011
- UN Straddling Stocks Agreement, 1982
- Universal Declaration of Human Rights, 1948
- Voluntary Principles on Security and Human Rights, 2000
- Verbond van Verzekeraars Code Duurzaam Beleggen, 2012 BIJLAGE 9
- Worst Forms of Child Labour Convention, 1999 (ILO Convention No. 182)

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