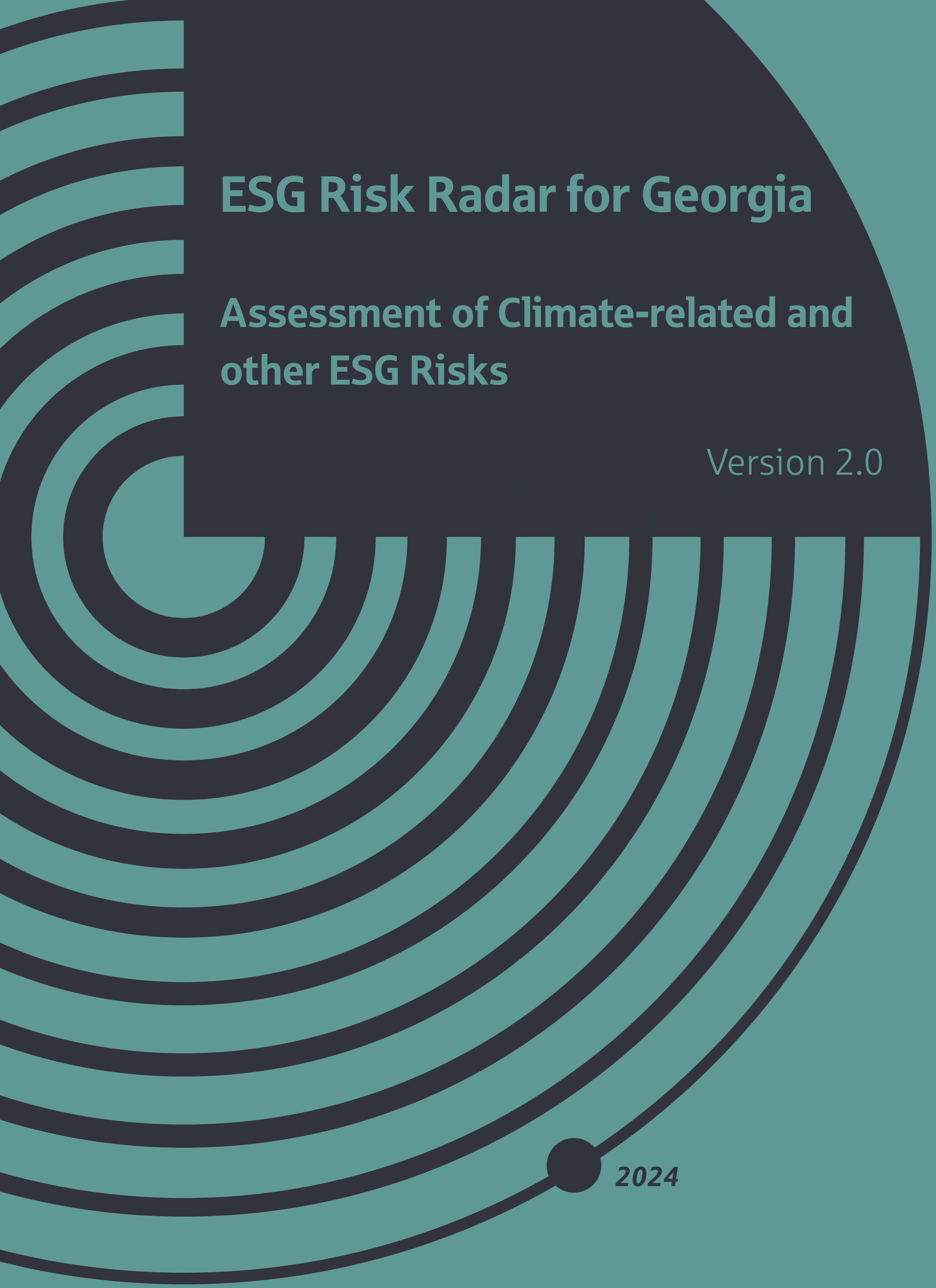


ESG Risk Radar for Georgia

Assessment of Climate-related and other ESG Risks

Version 2.0

2024

The document was developed by Prof. Dr. Tobias Peylo, on behalf of German Sparkassenstiftung for International Cooperation (DSIK), with outstanding support and cooperation from the National Bank of Georgia's (NBG) Sustainable Finance team (Salome Tvalodze and Elene Nikuradze), involving Giorgi Mukhigulisvili, Climate Change Expert.

The assignment was carried out in the framework of the project "Socio-ecological transformation of the rural MSME sector and sustainable financial services in Armenia, Georgia, Tajikistan and Ukraine", implemented by DSIK and funded by the German Ministry for Economic Cooperation and Development (BMZ).

The DSIK and NBG would like to acknowledge and show appreciation for the active participation and contribution in developing this document to the involved parties.

german
cooperation
DEUTSCHE ZUSAMMENARBEIT

Partners in
Transformation
Chambers and
Associations

implemented by

German Sparkassenstiftung
EASTERN EUROPE AND CENTRAL ASIA

საქართველოს ეროვნული ბანკი
National Bank of Georgia

Contents

- 1. Overview 5
- 2. ESG Risks and their impacts on financial sector 6
- 3. The Risk Radar Methodology 7
  - 3.1 Closing the Data-Gap 8
  - 3.2 A transparent Knowledge-based Approach 9
  - 3.3 Introduction of Sub-Scorings 13
  - 3.4 Sub-Scoring for Physical Climate Risk: Acute 15
  - 3.5 Sub-Scoring for Physical Climate Risk: Chronic 18
  - 3.6 Sub-Scoring for Transition Climate Risk: GHG-Emission Contribution 19
  - 3.7 Sub-scoring for Transition Climate Risk: Transitional Intensity; Probability of Regulatory Change 21
  - 3.8 Sub-scoring for Transition Climate Risk: Transitional Intensity; Impact of Regulatory Change 23
  - 3.9 Sub-scoring for Transition Climate Risk: Technological Change 25
  - 3.10 Sub-scoring for Transition Climate Risk: Customer Behavior 26
- 4. Results from the Risk Radar for Georgian Economic Sectors 28
- 5. Application of the Risk Radar - Heat Map for Georgian Financial Sector 32
- References: 34
- Annex I: Overview of the Risk Radar for Georgian Economic Sectors 35
- Annex II: Detailed Sector Assessments for the High-Risk Sectors 36
- A Agriculture 36
- B Mining and Quarrying 116
- C Manufacturing 132
- D Electricity, Gas, Steam and Air Conditioning Supply 212
- E Water Supply, Sewerage, Waste Management and Remediation Activities 228
- F Construction 244
- H Transportation and Storage 260

List of Figures and Tables

Figure 1: ESG Risk Transmission Mechanism 6
Figure 2: The Scope of the Risk Radar within ESG risk management 9
Figure 3: Determination of the ESG-Risk Score on Sector-Level 10
Figure 4: Modeling Transitional Intensity based on the concept of Socio-Economic Rationality 11
Figure 5: The Scoring Table of the ESG Risk Radar 12
Figure 6: Scoring Values for the Indicators in the Sub-Scoring 14
Figure 7: Consideration of Sectors along the Supply Chain 16
Figure 8: Example of Indicator Reference 17
Figure 9: Physical Climate Risk: Acute 17
Figure 10: Physical Climate Risk: Chronic 19
Figure 11: Transition Climate Risk: GHG-Emission Contribution 20
Figure 12: Transition Climate Risk: Transitional Intensity; Probability of Regulatory Change 22
Figure 13: Transition Climate Risk: Transitional Intensity; Impact of Regulatory Change 24
Figure 14: Transition Climate Risk: Technological Change 26
Figure 15: Transition Climate Risk: Customer Behavior 27
Figure 16. Overview of the ESG Risk Radar for Georgian Economic Sectors 30
Figure 17. ESG Risks Heat Map for Georgian Banking Sector 32

List of Abbreviations

BIS	Bank for International Settlement
EBA	European Banking Authority
ESG	Environmental, Social and Governance Factors
IPCC	Intergovernmental Panel on Climate Change
GDP	Gross Domestic Product
GF	Green Finance
GHG	Green House Gases
MFI	Microfinance Institution
NACE	Nomenclature statistique des activités économiques
NBG	National Bank of Georgia
SRI	Socially Responsible Investment
TI	Transitional Indicators

1. Overview

In the context of the economic consequences of climate change, managing Environmental, Social, and Governance (ESG) risks has become a high priority for Central Banks worldwide to ensure continued financial stability. To address the systematic challenges financial institutions face in managing ESG, particularly climate-related risks, the German Sparkassenstiftung for International Cooperation (DSIK), in collaboration with Kempten University, offers the ESG Risk Radar tool. This tool enables financial institutions to analyze climate-related and other ESG risks within their credit portfolios.

The Climate Risk Radar employs a pragmatic yet comprehensive approach. Based on the belief that risk management is most effective when fully understood, it replaces speculative modeling with knowledge-based, transparent assessments. Consequently, it provides a complete overview of ESG risks in the loan portfolio through a heat-map analysis compatible with the recommendations of the Bank for International Settlements (BIS). This analysis can serve as a foundation for individual risk analysis and pricing in the loan issuance process.

By applying a systematic top-down scoring methodology, risks become measurable and comparable, allowing financial institutions and regulators to implement successful risk management strategies. The assessment process consists of the following steps:

- Desk research resulting in ESG-risk assessment on a sector level, based on public and non-public sources of information, international reports, and comprehensive literature research.
- Integration of local expertise and scientific institutions for evaluation and optimization of the assessments in a multi-stakeholder process.
- Compilation of an extensive ESG-risk database on the sector level, along with explanatory sector profiles (detailed reports for sectors with high ESG risk).
- “Heat Map” assessment for individual financial institutions, as well as aggregated on a country level.
- Full disclosure of the findings and calculation methods for evaluating, utilizing, and adjusting the data for financial institutions.

In its first version, this cost-effective, tried, and tested method has been implemented with financial institutions and central banks on five continents. The Climate Risk Radar based on this methodology was also developed for Georgia (NBG, 2022).

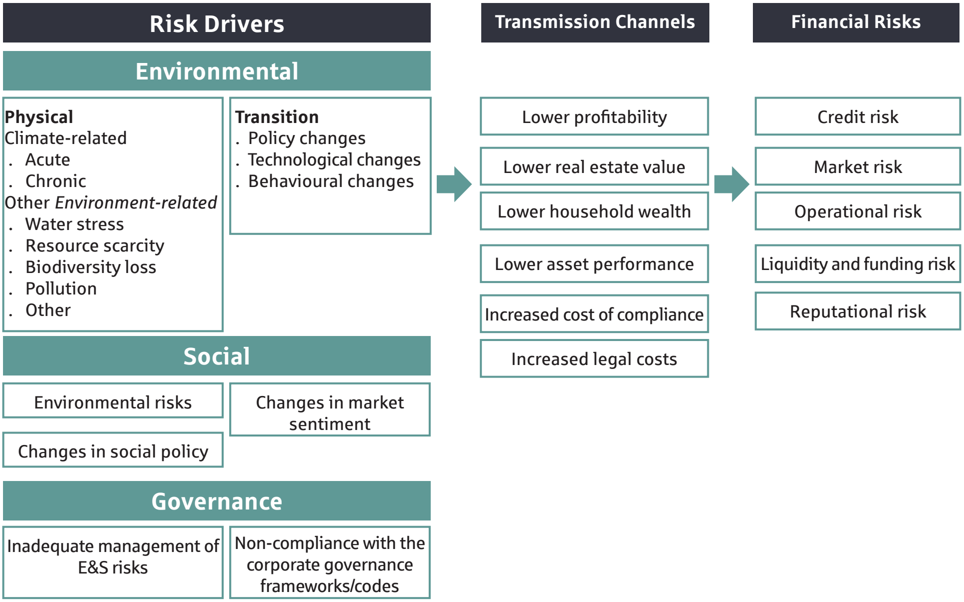
This report introduces the second version of the ESG Risk Radar. The methodology has been further optimized and streamlined: the use of sub-scores for all major scoring items allows for an even more detailed and transparent assessment, minimizing the subjectivity inherent in knowledge-based approaches. To achieve greater objectivity and precision, the methodology was comprehensively revised and fundamentally expanded.

2. ESG Risks and their impacts on financial sector

ESG risks, including climate- and nature-related risks, are increasingly acknowledged as critical elements that can impact the financial stability and sustainability of the financial sector. ESG Factors are environmental, social and governance matters that may have a positive or negative impact on the financial performance or solvency of households, corporates and financial institutions (EBA 2021; NBG, 2023).

ESG factors can materialize into financial risks through various transmission channels (Figure 1). Thus, ESG risks for the financial institutions are risks of negative materialization of ESG factors that affect their clients, borrowers, other counterparties and financial institutions themselves (NBG, 2023). It should be noted that these risks do not represent a new risk category in addition to existing ones, such as market or credit risks. Instead, they should be understood as cross-cutting risks that act as drivers of other risks, potentially causing or intensifying them. For example, credit defaults due to flooding are still considered credit risks, but their underlying cause is ESG-related.

Figure 1: ESG Risk Transmission Mechanism


Risk Drivers
Transmission Channels
Financial Risks
Environmental
Physical
Climate-related
. Acute
. Chronic
Other Environment-related
. Water stress
. Resource scarcity
. Biodiversity loss
. Pollution
. Other
Transition
. Policy changes
. Technological changes
. Behavioural changes
Social
Environmental risks
Changes in market sentiment
Changes in social policy
Governance
Inadequate management of E&S risks
Non-compliance with the corporate governance frameworks/codes
Lower profitability
Lower real estate value
Lower household wealth
Lower asset performance
Increased cost of compliance
Increased legal costs
Credit risk
Market risk
Operational risk
Liquidity and funding risk
Reputational risk

Source: NBG (2023)

Financial institutions need to identify, measure, and manage ESG risks, including climate- and nature-related risks. At the same time, they can identify opportunities and redirect financial resources to more green, social, and sustainable activities, supporting the transition towards a net-zero economy and contributing to the achievement of Sustainable Development Goals (SDGs). A robust process for identifying ESG risks will allow the financial sector to uncover these opportunities. Such a transition requires investments from companies, presenting a tangible and strongly pronounced business case for banks. There is a significant need for capital to enable the low-carbon economic transition.

Therefore, ESG integration involves considering both ESG risks and opportunities. These opportunities include intangible societal goals and tangible business-case-related components. Central banks, banking supervisors, and financial regulators in many countries prioritize addressing ESG risks due to their importance in ensuring financial stability and sector sustainability.

Recognizing this importance, the National Bank of Georgia (NBG) has developed ESG Guidelines through a Double Materiality Perspective. The aim of this document is to provide guidelines, methods, and tools for financial institutions to help them identify, measure, and manage ESG-related risks and discover new business opportunities. One of the methods referred to in the ESG Guidelines for analyzing climate-related and other ESG risks is the Risk Radar. Additionally, as part of the ESG Guidelines, the NBG, in cooperation with DSIK, developed the ESG Due Diligence Checklist Tool, which also utilizes results from the updated Risk Radar for Georgia.

3. The Risk Radar Methodology

In its publication „Principles for the effective management and supervision of climate-related financial risks “, the Basel Committee on Banking Supervision (BIS 2022) states that “Climate change may result in physical and transition risks that could affect the safety and soundness of individual banking institutions and have broader financial stability implications for the banking system” (BIS 2022, 1). Therefore, they recommend “a principles-based approach to improving risk management and supervisory practices related to climate-related financial risks” (BSI 2022, 1).

The roll-out and detailing of this approach often rests on the shoulders of the regional Central Banks and Supervisory activities. As all central banks address the same topics, their approaches are often rather similar. The challenge, then, lies in the implementation process on bank-level. Here, in addition to the formulation of requirements (especially concerning ESG-risk management), banks and MFI’s often need more than just a sensitization and definition of regulatory rules: As data for ESG assessment is scarce and experience needs to be built, it is advisable and helpful to offer pragmatic tools and methods to get acquainted with the topic and receive relevant information without the need of investing too many resources.

This is where the tried and tested tool “Climate Risk Radar” can offer great benefits. Being a knowledge-based, qualitative scoring approach in line with international ESG regulation, it offers banks a quick access into ESG risk assessment on sector level with options for portfolio-risk assessment and visualization (Heat Maps). Using the sector data and a set of sector-specific questions, this information can further be extended to a risk management on loan level, offering banks all options for an ESG-based loan giving process.

Designed in partnership with Kempten University, the tool uses a scoring-based approach to assess the specific situation of the economic sectors of a country and defines a data base with climate risk assessments accordingly. The tool has been implemented over 100 times in Germany for savings banks and cooperative banks as well as with DSIK for many banks and central banks on five continents.

3.1 Closing the Data-Gap

In its practical application, for most banks, the influence of ESG risks on credit risk is most relevant (for this and the following, see NBG 2022). In contrast, the availability of practitioners' instruments and the focus of most publications are centered on large companies listed on the capital markets, emphasizing the influence of ESG factors on stock prices and bond ratings. This focus is not helpful for most banks, as their customers' ESG information is neither published nor even known, and there are no available ESG ratings or assessments.

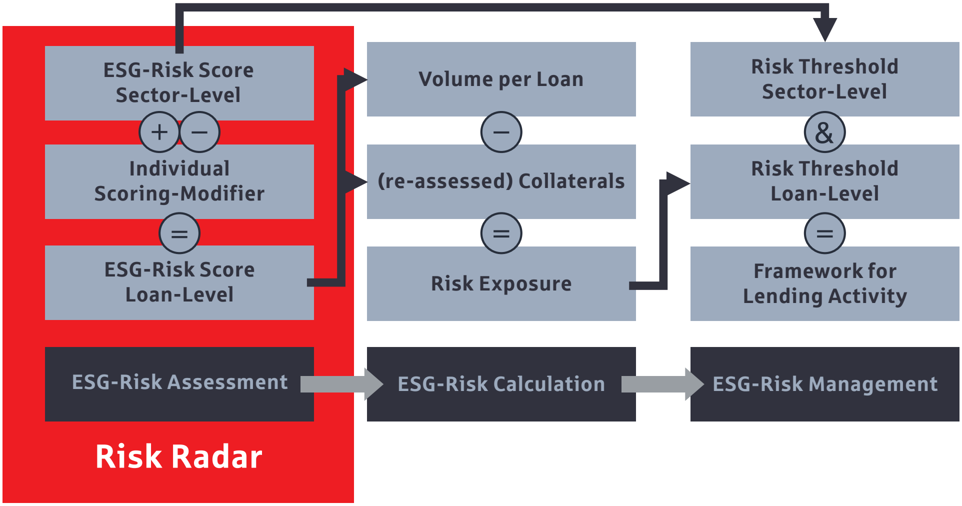
Regarding methodologies, the EBA provides a short overview of practical approaches to ESG risk management in its discussion paper (EBA 2020, 68). While the Alignment Method and Risk Framework Method are both interesting and full of potential, they require data that is not yet widely available. Hence, the Exposure Method comes into focus. The EBA states: "The third approach is a tool that banks can apply directly to the assessment of individual clients and individual exposures […] This can then be used to complement the standard assessment of financial risk categories. […] This method can be described as the possibly most practical method and the most straightforward to implement amongst the three approaches."

The Exposure Method is a scoring methodology applied to assess the relevant influence of ESG factors on the counterparty and to indicate the potentially harmful consequences for banks (e.g., via credit defaults). This method is used with the ESG Risk Radar. Using a scoring approach, it assesses whether and to what extent the client (through their location, business model, or activities) is at risk of negative impacts from ESG factors, potentially impeding their ability to repay loans and thus causing an ESG risk for the bank/MFI.

All scoring methodologies use one of two different approaches: a bottom-up approach, which involves collecting relevant data from the client, as is common practice in credit risk management to assess creditworthiness. However, in the context of ESG and climate risk assessment, this would require information from the client that is often unavailable.

Hence, the ESG Risk Radar uses a scoring methodology that opts for the top-down approach: using available data to assess the potential ESG risk of a sector, largely solving the data problem at the loan level. After identifying and assessing the sector risk, only a few simple questions are needed to conclude from the industry level to the client/counterparty level.

Figure 2: The Scope of the Risk Radar within ESG risk management


ESG-Risk Score Sector-Level
+
−
Individual Scoring-Modifier
=
ESG-Risk Score Loan-Level
Volume per Loan
−
(re-assessed) Collaterals
=
Risk Exposure
Risk Threshold Sector-Level
&
Risk Threshold Loan-Level
=
Framework for Lending Activity
ESG-Risk Assessment
ESG-Risk Calculation
ESG-Risk Management
Risk Radar

3.2 A transparent Knowledge-based Approach

Based on the information from this assessment, banks can proceed with the ESG risk management process by first quantifying the risks and then devising management actions, such as setting thresholds, requiring additional collateral, or adjusting loan pricing.

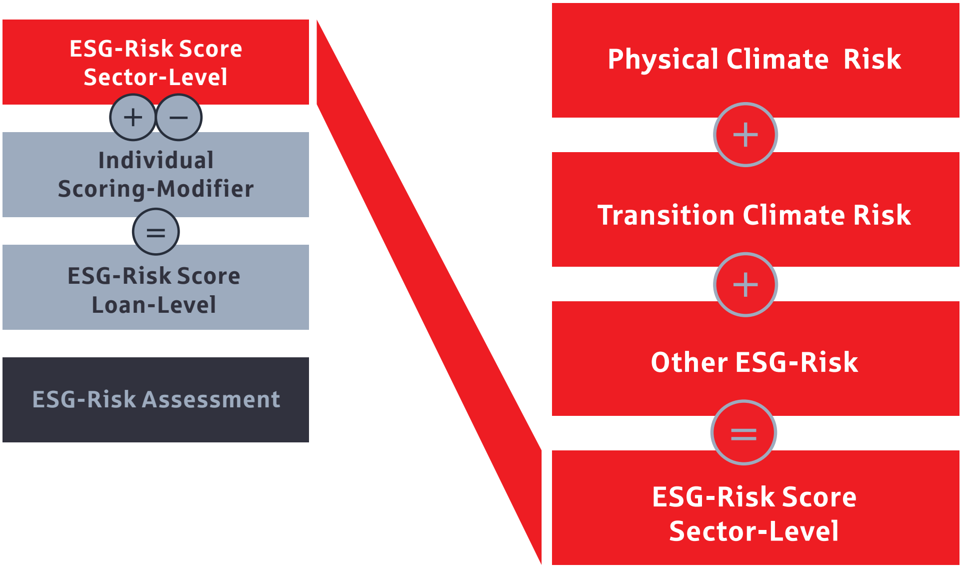
At its core, managing risks involves identifying and assessing potential threats to understand them and make informed decisions. As Borge (2001) states, “Risk management is not, and will never be, a magic formula that will always give you the right answer. It is a way of thinking that will give you better answers to better questions and by doing so helps you to shift the odds in your favor.”

In many risk categories, this is achieved by analyzing past data. However, for ESG risks, which are future-oriented and unprecedented, the necessary data for complex mathematical models is not yet available. As a pragmatic compromise, qualitative analysis combined with a structured, thorough consideration of all relevant aspects is an important first step on the learning journey of ESG risk management.

Therefore, the ESG Risk Radar has been deliberately designed to be pragmatic, comprehensible, and explainable. By fully disclosing its mechanics, there is no “black box”: The risk assessment via the sector scoring scheme is transparently available to users and can be adapted if necessary. As a result, it serves as an understanding-based yet lean risk management tool, adaptable to the individual context and needs of each bank.

To implement a thorough and systematic assessment of ESG risks, all relevant aspects (as highlighted in Figure 3) need to be considered.

Figure 3: Determination of the ESG-Risk Score on Sector-Level


ESG-Risk Score Sector-Level
+ −
Individual Scoring-Modifier
=
ESG-Risk Score Loan-Level
ESG-Risk Assessment
Physical Climate Risk
+
Transition Climate Risk
+
Other ESG-Risk
=
ESG-Risk Score Sector-Level

For each individual sector, the assessment process begins with physical climate risks, considering both acute and chronic forms. Numerous sources, both international and national, provide informed views on scientific findings and practitioners' estimations regarding the extent and manner in which climate change will affect the economic system.

The crucial aspect of this analysis is to understand and model how different sectors are impacted. For example, companies in sectors closely tied to nature, such as fruit farmers in agriculture, are directly affected by even moderate weather events or changes. In contrast, other sectors, like power plants, may be less vulnerable to storms but are still affected by temperature changes (due to the need for cool water in reactor cooling processes) or the availability of natural resources like water (as seen in the paper industry).

The next important aspect is to model transition risks. Transition risk involves examining how fast and intensely the transformation is occurring within a given sector and how likely it is for a company to struggle to keep up and suffer economic damage accordingly.

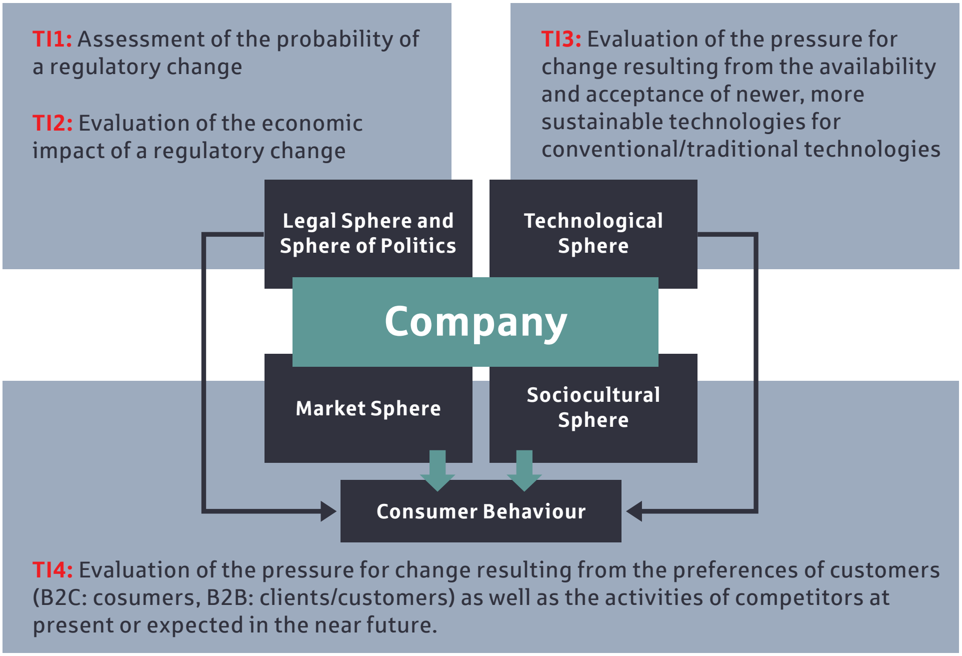
Two aspects are equally important here: the GHG contribution and the Transitional Intensity of each sector. The GHG contribution considers an industry's emissions, as highly emitting industries often face increasing regulatory pressure. Transitional Intensity refers to the current pressure manifested through regulatory developments, the availability of new and alternative technologies, and public perception, especially among relevant customers and consumers.

To model transitional intensity, the stakeholder-model of Socio-Economic Rationality (Schaltegger et al. 2003, 36 following) is used. This model describes a company's framing conditions as a set of spheres where different relevant stakeholders are active, contributing to a company's success or failure through their actions.

The legal sphere includes all aspects of compliance with legal or regulatory requirements. The technological sphere represents the availability and acceptance of new technologies, which can either enable or hinder the pace of transformation. The market sphere encompasses all stakeholders involved in service creation and provision processes. Lastly, the sociocultural sphere, which includes the general public, influences consumer behavior and demand in the markets, alongside the legal and technological spheres.

Accordingly, four Transitional Indicators (TI) can be identified, as highlighted in Figure 4.

Figure 4: Modeling Transitional Intensity based on the concept of Socio-Economic Rationality



TI1: Assessment of the probability of a regulatory change

TI2: Evaluation of the economic impact of a regulatory change

TI3: Evaluation of the pressure for change resulting from the availability and acceptance of newer, more sustainable technologies for conventional/traditional technologies

TI4: Evaluation of the pressure for change resulting from the preferences of customers (B2C: cosumers, B2B: clients/customers) as well as the activities of competitors at present or expected in the near future.

Finally, after considering physical climate risks and transition risks, other ESG risks need to be included as well. These include contributions to the loss of biodiversity, other environmental risks, human rights issues, and other social risks.

To assess the extent and severity of ESG risks, the ESG Risk Radar uses a scoring scheme with a total of 5 levels ranging from 0 to 4:

1. A development/risk is **theoretical** and will only in very isolated cases cause damage.
2. A development/risk is already **perceptible** and will cause some damage in individual cases (which, on average, can be minor).
3. A development/risk is **obvious** and must be harmful to business.
4. A development/risk is **significant**, causing serious and extensive damage.
5. A development/risk is **existential**, with potential damage being very high and possibly fatal for many companies within the sector.

For both physical climate risks and transition risks, this scoring is applied, rating the individual relevance to the given sector. It results in a 0-4 score calculated as a mean of the different components, each generated by a differentiated sub-scoring (detailed in chapter 3.3).

For other ESG risks, a more global approach is used with no sub-scorings. Here, each risk category can add a penalty between 0 and 1, with the keywords described above translated into 0.25 steps (via division by 4). For example, if there are perceptible problems in the area of biodiversity for a sector, the rating would be 0.25. If the problems are significant, 0.75 would be the appropriate score.

Each of the three pillars of ESG risk—physical climate risk, transition risk, and other ESG risks—can contribute up to 4 points, making up to a third of the total score. This results in a maximum of 12 score points, as shown below.

Figure 5: The Scoring Table of the ESG Risk Radar

NACE Code	**Sector Name**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		0-4, Weight 50%		0-4	1
		Chronic		0-4, Weight 50%			2
	Transition Climate Risk	GHG-Emission Contribution		0-4, Weight 50%		0-4	3
		Transitional Intensity	Probability of regulatory Change	0-4, Weight 25%	0-4, Weight 50%		4
			Economic Impact of regulatory Change	0-4, Weight 25%			5
			Technological Change	0-4, Weight 25%			6
			Customer Behavior	0-4, Weight 25%			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0-1	0-4	8
		Other Environmental Risks		Add-on Factor	0-1		9
		Possible Human Rights Issues		Add-on Factor	0-1		10
		Other Social Risks		Add-on Factor	0-1		11
					ESG-Risk Score at Sector-Level:	0-12	

Σ

This scoring is applied to all economic sectors of a country using the NACE sector classification scheme and corresponding sector codes (Eurostat 2008). While the assessment primarily focuses on the parental sector, high-risk sectors such as "A Agriculture" and "C Manufacturing" also include some subsector assessments.

The assessment follows a knowledge-based approach, starting with initial desk research followed by a review by local experts. For sectors identified as high risk (with risk sector scores of 6 and higher), more detailed sector profiles are provided, offering detailed explanations and sources for the assessment.

For the first version of the ESG Risk Radar, the explanation above outlines the process and its results comprehensively. To add depth and reduce subjectivity, a second version of the concept now uses sub-scorings, described below.

3.3 Introduction of Sub-Scorings

For the first version of the ESG Risk Radar, every item on the scoring table (see Figure 5 above) was researched and then assessed using a 5-level scale based on the identified sources. This process required a considerable level of expertise and, at the same time, remained somewhat arbitrary. The assessment of the significance of a criterion and its degree of influence was not always objective. Consequently, two independent observers would not necessarily reach the same conclusion every time. Since agreement between independent researchers is an important criterion for a tool that meets scientific standards, the methodology of the ESG Risk Radar was fundamentally expanded to achieve greater objectivity and precision.

For every major item on the scoring table, a sub-scoring system was defined. This sub-scoring replaces the need to individually assess and evaluate the parameter value of an item by checking a sequence of indicators. The basic principle involves posing and answering a question that encapsulates the essence of the topic at hand, then further specifying the result by comparing it with a predefined set of indicators.

For the sub-scoring of physical climate risks in their acute form, the essential question is: "Are acute climate events in the country/region already relevant for the sector under consideration?" If the answer is "no," a second question helps to further grade this outcome: "Is it likely that this relevance will arise in the future?" This question defines whether the total outcome of this item in the main scoring table is "0" ("no"), 0.5 ("yes"), or "1.0" ("yes, very likely").

If the answer to the essential question is "yes," the result is further specified by checking a set of indicators. The predefined indicators simplify the assessor's task, ensuring they consider the important aspects of the topic without having to determine the criteria independently. This standardization improves objectivity and consistency among different assessors evaluating the same sector. Identifying all relevant aspects during the design process was crucial to ensure no important criterion was omitted.

The impact of each criterion on the scoring results depends on two drivers: the quality of the source and the predefined weight. This consideration was introduced in version 2 of the ESG Risk Radar. The rationale is that not all sources from the research process have the same credibility. For example, an official statement from a ministry has a completely different implication than a blog entry by a private person. However, even a blog entry can provide valuable insights on topics not covered by official sources. Thus, both types of sources should be considered but with different impacts on the final score.

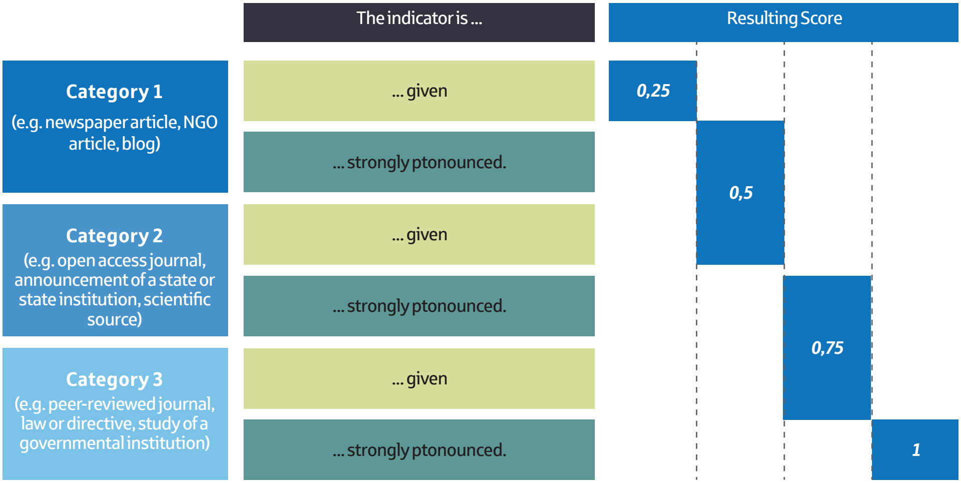
A new approach in the sub-scorings first differentiates between the nature and quality of the source and then the message it conveys regarding the presence of the respective indicator (see Figure 6).

As for the nature of the source, 3 categories are defined:

- Category 1 comprises newspaper articles, NGO-sources, private blogs and other publications that are not subject to reliable quality control.
- Category 2 comprise sources with a high level of acceptance and quality control, e.g., official announcements and scientific sources.
- Category 3 now is the highest level of credibility that can only be found in laws or directives, studies of governmental institutions or peer reviewed scientific sources.

In all these cases, it is further distinguished whether the indicator at hand is merely confirmed in the source or if its relevance is strongly pronounced. The combination of both aspects leads to a methodology in which each item on the scoring list can receive a value between 0.5 and 1.

Figure 6: Scoring Values for the Indicators in the Sub-Scoring


The indicator is ...
Resulting Score
Category 1
(e.g. newspaper article, NGO article, blog)
Category 2
(e.g. open access journal, announcement of a state or state institution, scientific source)
Category 3
(e.g. peer-reviewed journal, law or directive, study of a governmental institution)
... given
... strongly ptonounced.
... given
... strongly ptonounced.
... given
... strongly ptonounced.
0,25
0,5
0,75
1

This scoring result is then further weighted, because not every indicator can be considered equally important for the overall result. For example, a certain fact should always have a higher weight for the assessment if it is given within the country of consideration than if it would happen in another country.

For the weighting, a total multiplier value of 6 (for 6 indicators) is distributed individually to the indicators. If for instance, indicator 1 is assigned a weight of 2, for the remaining 5 indicators only a total value of 4 can be assigned. Please note that weightings are only used if there are strong arguments for an increased or reduced importance of an indicator, otherwise an equal weighting will be applied.

In addition to the 6 indicators, a "Local expert grading" can adjust the score by 0.5 (subtracting or adding) to consider local knowledge that may not have been sufficiently covered in the sources.

PLEASE NOTE: Even if the sum of all indicators and grading exceed the value of 4, the maximum scoring result of the sub-scoring remains 4. With reference to the scoring scheme, 4 means "A development/risk is existential, the potential damage is very high and can be fatal for many companies within the sector". This is the highest value and cannot be exceeded, neither in the total score nor on the level of the sub-scorings.

Based on these considerations, sub-scorings for the following items of the main scoring table (figure 5) have been defined:

- Physical Climate Risk: Acute
- Physical Climate Risk: Chronic
- Transition Climate Risk: GHG-Emission Contribution
- Transition Climate Risk: Transitional Intensity; Probability of Regulatory Change
- Transition Climate Risk: Transitional Intensity; Impact of Regulatory Change
- Transition Climate Risk: Transitional Intensity; Technological Change
- Transition Climate Risk: Transitional Intensity; Customer-Behavior

3.4 Sub-Scoring for Physical Climate Risk: Acute

As mentioned in the example above, the assessment of acute physical climate risk follows the essential question: "Are acute climate events in the country/region already relevant for the sector under consideration?" If the answer is "no," the grading is guided by the follow-up question: "Is it likely that this relevance will arise in the future?"

The differentiation of the "yes" answer is achieved by the consideration of the following six indicators:

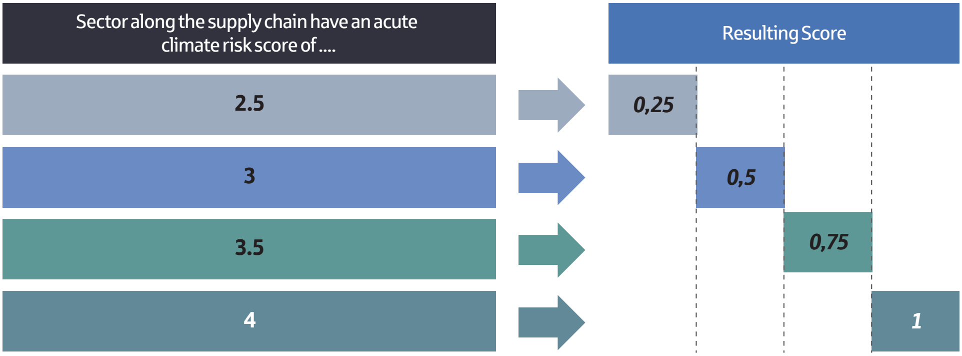
1. Observed loss of assets/property
2. Expected impact on revenue
3. Expected impact on costs
4. Indicators 1-3 expected to increase in the future
5. Lack of adaptability of the business model
6. Sectors in the supply chain have a score ≥ 2.5 for acute climate risks;

All indicators are considered to have the same impact on the total result and thus receive an equal weight of 1.

With regard to indicator number 6, additional explanation is required. While in the scoring logic of the ESG Risk Radar each sector is essentially considered on its own, there are nevertheless aspects of climate-related risks and ESG risks where influencing factors can be “contagious”. For example, in the past events have occurred when nuclear power plants had to be temporarily shut down because – due to climatic reasons – the water required of the cooling of the reactor was either lacking or too hot. This in turn has affected other energy-intense sectors via increases of the electricity price. Likewise, when low river levels hinder inland navigation, manufacturing industries, e.g., in the chemical sector, may be affected as well.

This “risk contagion” between sectors is addressed using the following systematic approach: If other sectors along the supply chain (upstream or downstream) that have a strong connection with the sector under consideration have a high score for the same risk category (in this case, acute climate risk), the sector under consideration receives a malus (penalty) depending on the level of the risk score of the connected sector:

Figure 7: Consideration of Sectors along the Supply Chain


Sector along the supply chain have an acute climate risk score of ....
Resulting Score
2.5
0,25
3
0,5
3.5
0,75
4
1

This logic of mutual influence between sectors is also a new feature of version 2 of the ESG Risk Radar. It introduces a more networked and systematic perspective which is a strong feature of climate-related and ESG risk.

Using the reference numbers on the sidebar of the scoring table, the value of the indicators is further detailed. For example, the indicator with the reference number 5 could be detailed in the following manner, both indicating the source quality/ category and the level of pronunciation of the indicator at hand:

Figure 8: Example of Indicator Reference

5	Indicator is given	**X**	Source Category	**2**	Whitt, J.; Gordon, S. (2023): This is the economic cost of extreme weather. https://www.weforum.org/agenda/2023/01/extreme-weather-economic-cost-wef23/	
	Indicator is strongly pronounced					

Please note that this level of detail is only given for the high-risk sectors, for which individual scoring sheets are provided.

Combining all of these aspects, the sub-scoring for “Physical Climate Risk: Acute” reads as follows:

Figure 9: Physical Climate Risk: Acute

NACE Code	Sector Name			**Scoring**			**Reference**
	Are acute climate events in the country/region already relevant for the sector under consideration?			**Score**	**Weight**	**Total**	
	"No"	Is it likely that this relevance will be given in the future?	"No"				1
			"Yes"	+0,5	**1,00**		
			"Yes, very likely"	+1	**1,00**		
	"Yes"	Observed loss of assets/property		see score mechanics	1,00		2
		Expected impact on revenue		see score mechanics	1,00		3
		Expected impact on costs		see score mechanics	1,00		4
		1-3 expected to increase in the future		see score mechanics	1,00		5
		Lack of adaptability of the business model		see score mechanics	1,00		6
		Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)		see score mechanics	1,00		7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		see score mechanics	+/-		8
	Acute Climate Risk Score at Sector-Level:					0,0	Max. 4

Σ

As can be seen in the sub-scoring above that after the six indicators there is an additional item reserved for a “fine tune” of local expertise. In the first version of the ESG Risk Radar, evaluation workshops involving local experts have been used to evaluate and, if necessary, correct the assessment of the desk research. This was especially important, as the subjectivity embedded in the process could easily lend to the omission of important aspects.

Now in the new version, the combination of predefined indicators with the consideration of quality and pronunciation of the sources has significantly reduced the level of subjectivity. Nevertheless, local expertise is an important factor as it enriches the written sources by experience. Thus, this item on the scoring table should be used to modify the total score if the result is deemed too low or too high in the opinion of the expert. This grading option is offered in every sub-scoring.

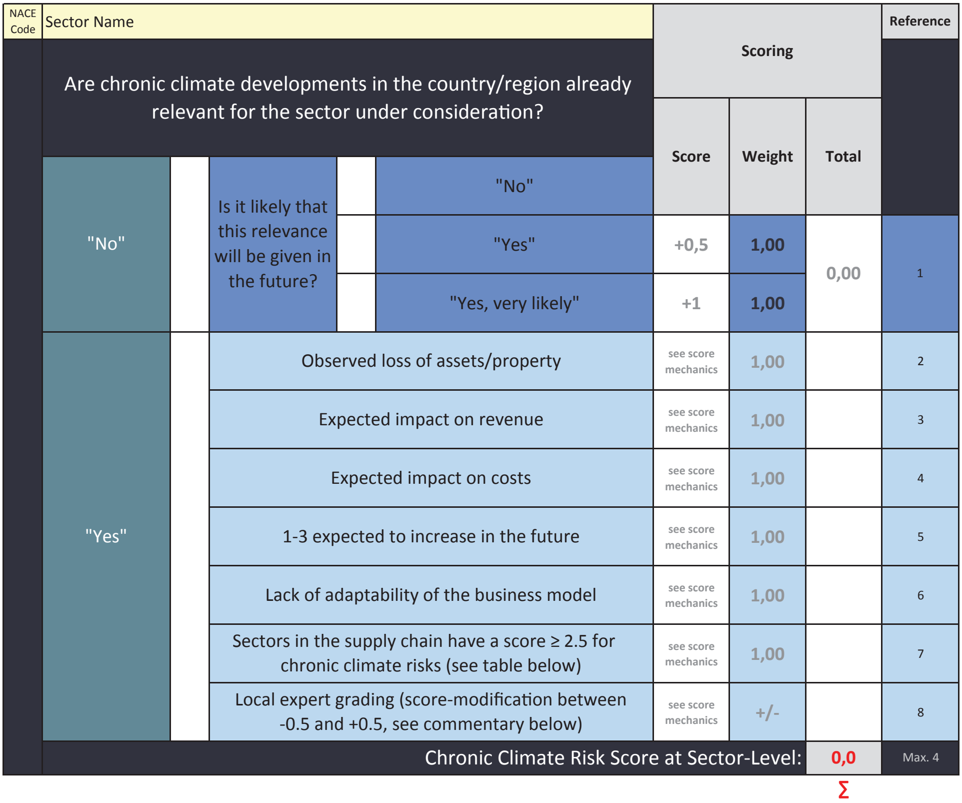
3.5 Sub-Scoring for Physical Climate Risk: Chronic

Likewise, the assessment of this item follows the essential question “Are chronic climate developments in the country/region already relevant for the sector under consideration?”. The grading of the “no” answer is again guided by the question “Is it likely that this relevance will be given in the future?”. The differentiation of the “yes” answer considers the same six indicators:

1. Observed loss of assets/property
2. Expected impact on revenue
3. Expected impact on costs
4. Indicators 1-3 expected to increase in the future
5. Lack of adaptability of the business model
6. Sectors in the supply chain have a score ≥ 2.5 for acute climate risks

Again, all indicators are considered to have the same impact on the total result and thus receive a weight of 1.

Figure 10: Physical Climate Risk: Chronic



NACE Code	Sector Name			Scoring			Reference
	Are chronic climate developments in the country/region already relevant for the sector under consideration?			Score	Weight	Total	
	"No"	Is it likely that this relevance will be given in the future?	"No"				
			"Yes"	+0,5	1,00	0,00	1
			"Yes, very likely"	+1	1,00		
	"Yes"	Observed loss of assets/property		see score mechanics	1,00		2
		Expected impact on revenue		see score mechanics	1,00		3
		Expected impact on costs		see score mechanics	1,00		4
		1-3 expected to increase in the future		see score mechanics	1,00		5
		Lack of adaptability of the business model		see score mechanics	1,00		6
		Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)		see score mechanics	1,00		7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		see score mechanics	+/-		8
	Chronic Climate Risk Score at Sector-Level:					0,0	Max. 4

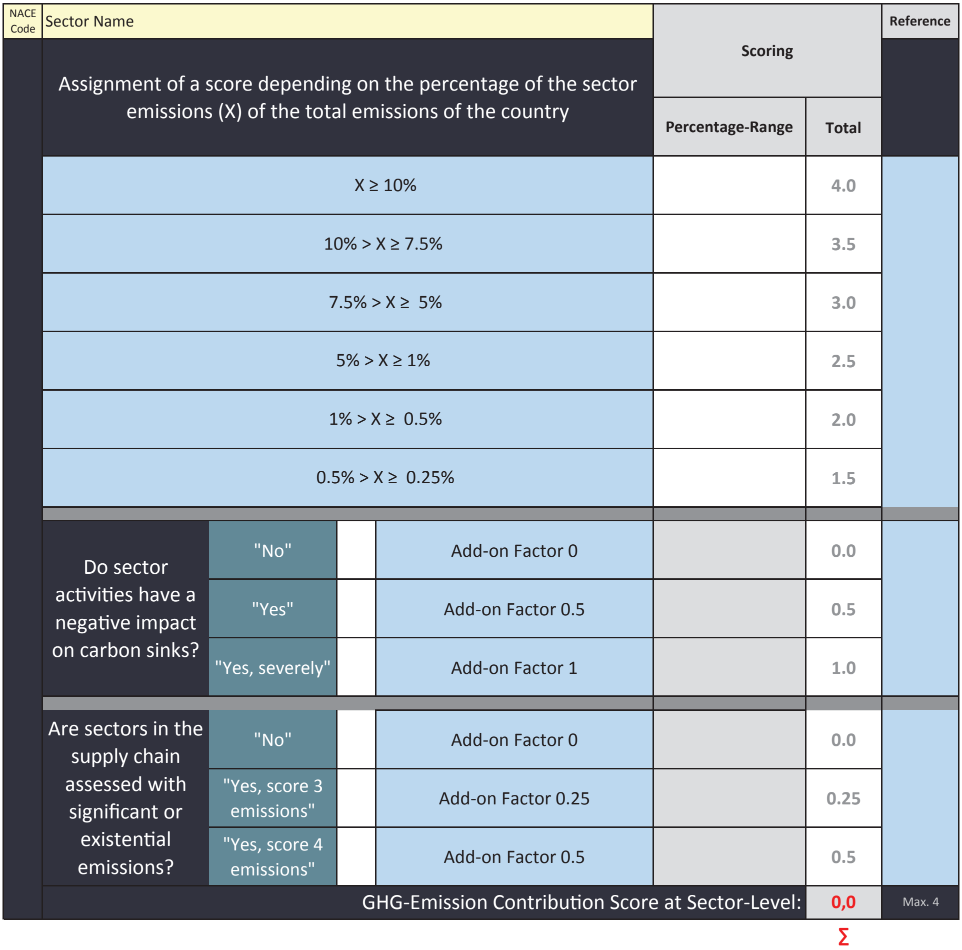
Σ

3.6 Sub-Scoring for Transition Climate Risk: GHG-Emission Contribution

This sub-scoring is unique in the scoring tables, as it does not rely on indicators. Instead, it uses the percentage of the sector emissions (X) of the total emissions of the country as essential question.

PLEASE NOTE: Instead of the use of a relative share of the countries emissions alone, this could be relativized based on the contribution of the respective sector to the country's Gross Domestic Product (GDP). This would offer an additional perspective as it includes the importance of the sector to the country's economy.

Figure 11: Transition Climate Risk: GHG-Emission Contribution



NACE Code	Sector Name			Scoring		Reference
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country			Percentage-Range	Total	
	X ≥ 10%				4.0	
	10% > X ≥ 7.5%				3.5	
	7.5% > X ≥ 5%				3.0	
	5% > X ≥ 1%				2.5	
	1% > X ≥ 0.5%				2.0	
	0.5% > X ≥ 0.25%				1.5	
	Do sector activities have a negative impact on carbon sinks?	"No"	Add-on Factor 0		0.0	
		"Yes"	Add-on Factor 0.5		0.5	
		"Yes, severely"	Add-on Factor 1		1.0	
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"	Add-on Factor 0		0.0	
		"Yes, score 3 emissions"	Add-on Factor 0.25		0.25	
		"Yes, score 4 emissions"	Add-on Factor 0.5		0.5	
	GHG-Emission Contribution Score at Sector-Level:				0,0	Max. 4
					Σ	

In addition to the emission contribution, in this sub-scoring there are two additional questions. The first reads: “Do sector activities have a negative impact on carbon sinks?” and it refers to the change of land use and the destruction of carbon sinks that goes along with it. Accordingly, there is a malus between 0 and 1 for this aspect.

The second question is: “Are sectors in the supply chain assessed with significant or existential emissions?” In a manner similar to the consideration of sectors along the supply chain (see above figure 7) but reduced to a more compact form, there is a malus of 0.25 to 0.5 for a connection with sectors that have been assessed with results of 3 or 4 in this sub-scoring. This reflects the consideration of scope 3 emissions.

3.7 Sub-scoring for Transition Climate Risk: Transitional Intensity; Probability of Regulatory Change

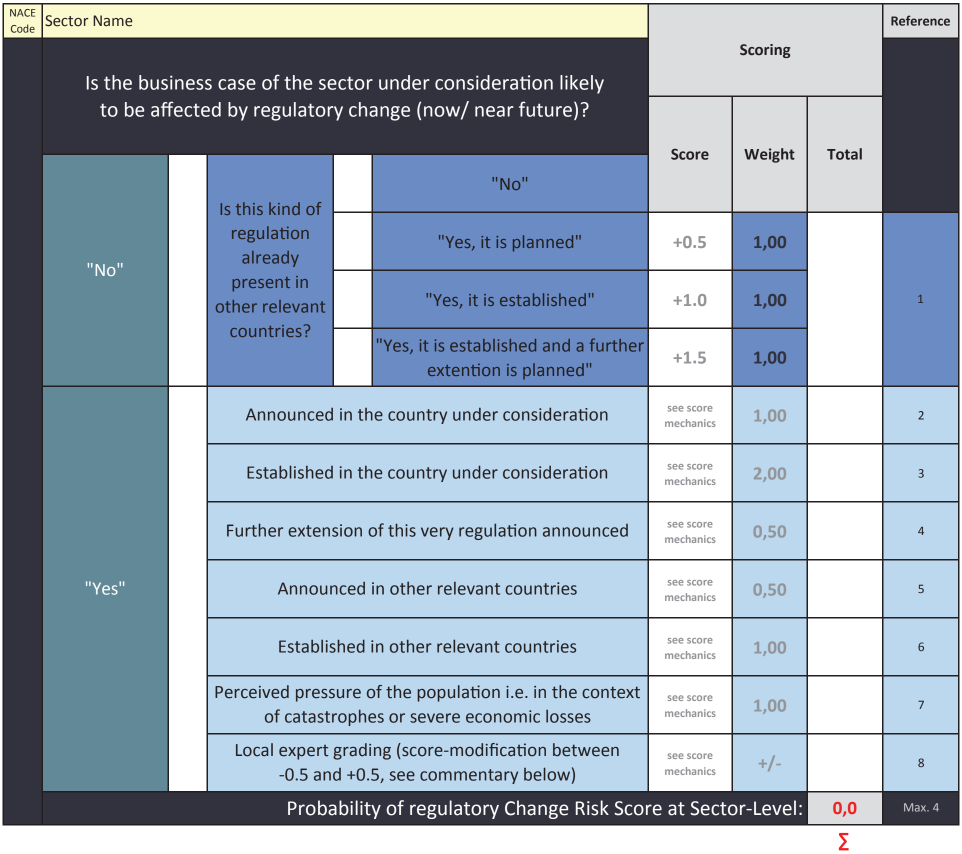
Here, the scheme of the sub-scoring returns to its standard form. The essential question reads “Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?” In this sense, “affected” comprises all positive or negative consequences that a company may have in the wake of an ESG-related regulation.

The grading question for the “no” answer is: “Is this kind of regulation already present in other relevant countries?” Please note that for this and the following sub-scorings there are 4 grading questions for the “no” answer, resulting in an outcome between 0 and 1.5. The reason for this greater differentiation is: Within the field of transition risks not only events and situations in the country under consideration are contributing towards change and transformation, but events in other relevant countries as well. Here, the question whether another country should be considered as a “relevant” country depends on a combination of political, cultural, and economic ties between countries. Hence, more important than the geographical distance is the level of influence and connectivity between the countries.

The indicators for the “yes” answer to the essential question are defined as follows:

1. Announced in the country under consideration
   Please note: The term “announced” refers to the formal public communication of a proposed or newly enacted law or regulation. This announcement is typically made by the government, legislative body, or relevant authority responsible for creating and implementing the legislation. The purpose of announcing new legislation is to inform the public, stakeholders, and relevant organizations about the changes in the law and its implications.
2. Established in the country under consideration
3. Further extension of this very regulation announced
4. Announced in other relevant countries
5. Established in other relevant countries
6. Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses

Figure 12: Transition Climate Risk: Transitional Intensity; Probability of Regulatory Change



NACE Code	Sector Name					Scoring			Reference
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?								
						Score	Weight	Total	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"	+0.5	1,00		1
					"Yes, it is established"	+1.0	1,00		
					"Yes, it is established and a further extention is planned"	+1.5	1,00		
	"Yes"		Announced in the country under consideration			see score mechanics	1,00		2
			Established in the country under consideration			see score mechanics	2,00		3
			Further extension of this very regulation announced			see score mechanics	0,50		4
			Announced in other relevant countries			see score mechanics	0,50		5
			Established in other relevant countries			see score mechanics	1,00		6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			see score mechanics	1,00		7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			see score mechanics	+/-		8
	Probability of regulatory Change Risk Score at Sector-Level:							0,0	Max. 4
								Σ	

As a difference to the preceding sub-scoring, not all indicators are assigned the same weight. An established legislation weights higher than an announced one, and these weights should further be differentiated whether they are happening in the country under consideration or other relevant countries. Please note that the total of the weights remains at 6 for all 6 indicators.

3.8 Sub-scoring for Transition Climate Risk: Transitional Intensity; Impact of Regulatory Change

Following the assessment of the probability of regulatory change, the sub-scoring to assess its impact answers the essential question "Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?"

Here, the grading question for the "no" answer combines two aspects: "Is probability of regulatory change > 1.5 and is an ESG-impact observed in other relevant countries?" If any of both are denied, the influence is assessed as 0. If both are given, depending on their level of ESG-impact (between impact assumed, impact perceived and heigh impact perceived) the grading results in a value between 0.5 and 1.5 respectively. Here, as with the term "affected", the term "ESG impact" refers to all positive or negative consequences that a company may have in the wake of an ESG-related regulation.

The first two indicators for the "yes" answer are of special importance:

1. Effect on the business model
2. Strong effect on the business model

   In both cases, the "effect on the business model" refers to the impact or changes that a regulatory change may have on the fundamental structure, operations, and profitability of a business. It reflects how various internal and external elements influence the way a company conducts its activities, generates revenue, and sustains its operations. Understanding the effect on the business model is essential for assessing the consequences of transition risk. The "strong" effect includes the evaluation that effect under consideration is of particular intensity. In this context, it might come as a surprise that the weighting of the indicator "effect" is twice the weight of the "strong effect". This is because both are considered cumulative: If there is a strong effect, both indicators are given and checked, and to prevent an inflation of scores the "strong" effect was weighted to a lesser extent. Similar aspects referring to the cumulative scores are visible below with other indicators as well.

The remaining indicators are:

3. 1-2 expected to increase in the future (referring to the first and second indicator respectively)
4. 1 or 2 obvious in other relevant countries (again referring to the first and second indicator)

5. Impact on the value chain (i.e. the sector is a node point in the value chain and crucial for other sectors that rely on its products or services, this is the case especially for energy generation or transportation)
6. Lack of adaptability of the business model

Figure 13: Transition Climate Risk: Transitional Intensity; Impact of Regulatory Change

NACE Code	Sector Name					Scoring			Reference
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					Score	Weight	Total	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"	+0.5	1,00		1
					"Yes, score > 1.5 and an ESG impact is perceived"	+1.0	1,00		
					"Yes, score > 1.5 and a high ESG impact is perceived"	+1.5	1,00		
	"Yes"		Effect on the business model			see score mechanics	2,00		2
			Strong effect on the business model			see score mechanics	1,00		3
			1-2 expected to increase in the future			see score mechanics	0,50		4
			1 or 2 obvious in other relevant countries			see score mechanics	1,00		5
			Impact on the value chain			see score mechanics	0,50		6
			Lack of adaptability of the business model			see score mechanics	1,00		7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			see score mechanics	+/-		8
	Probability of regulatory Change Risk Score at Sector-Level:							0,0	Max. 4

Σ

3.9 Sub-scoring for Transition Climate Risk: Technological Change

Without technical alternatives, no transformation is possible. For example, the abolishment of the combustion engine is only conceivable because electric mobility offers an alternative within the scope of personal transport.

The alternatives considered in this sub-scoring, however, do not always have to be strictly technical. They can also refer to processes and approaches that offer a more sustainable alternative to the conventional status quo, as is the case for example in organic farming (as an alternative to conventional farming) or in hydrogen-powered steel manufacturing.

Sometimes, however, the only sustainable alternative is to quit a certain practice or technology completely: In the tobacco-sector, for example, e-cigarettes are not a sustainable alternative. Hence, the only sustainable alternative here is to quit smoking completely. Thus, the technological change threatening that sector is an increase of the number of non-smokers.

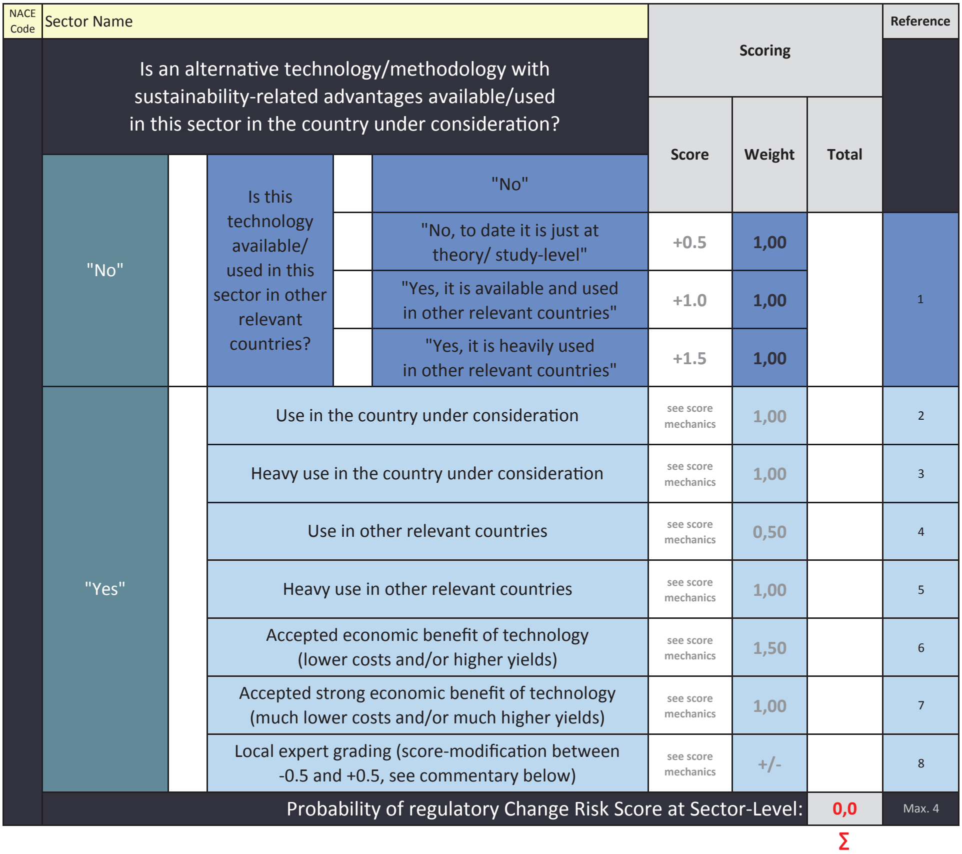
So, this sub-scoring is based on the essential question "Is an alternative technology/methodology with sustainability-related advantages available/ used in this sector in the country under consideration?"

As with the previous indicator, the grading question for the "no" answer refers to other relevant countries; it reads: "Is this technology available/ used in this sector in other relevant countries?"

Accordingly, the indicators for the "yes" answer also include this differentiation:

1. Use in the country under consideration
2. Heavy use in the country under consideration
3. Use in other relevant countries
4. Heavy use in other relevant countries
5. Accepted economic benefit of technology (lower costs and/or higher yields)
6. Accepted strong economic benefit of technology (much lower costs and/or much higher yields)

Figure 14: Transition Climate Risk: Technological Change



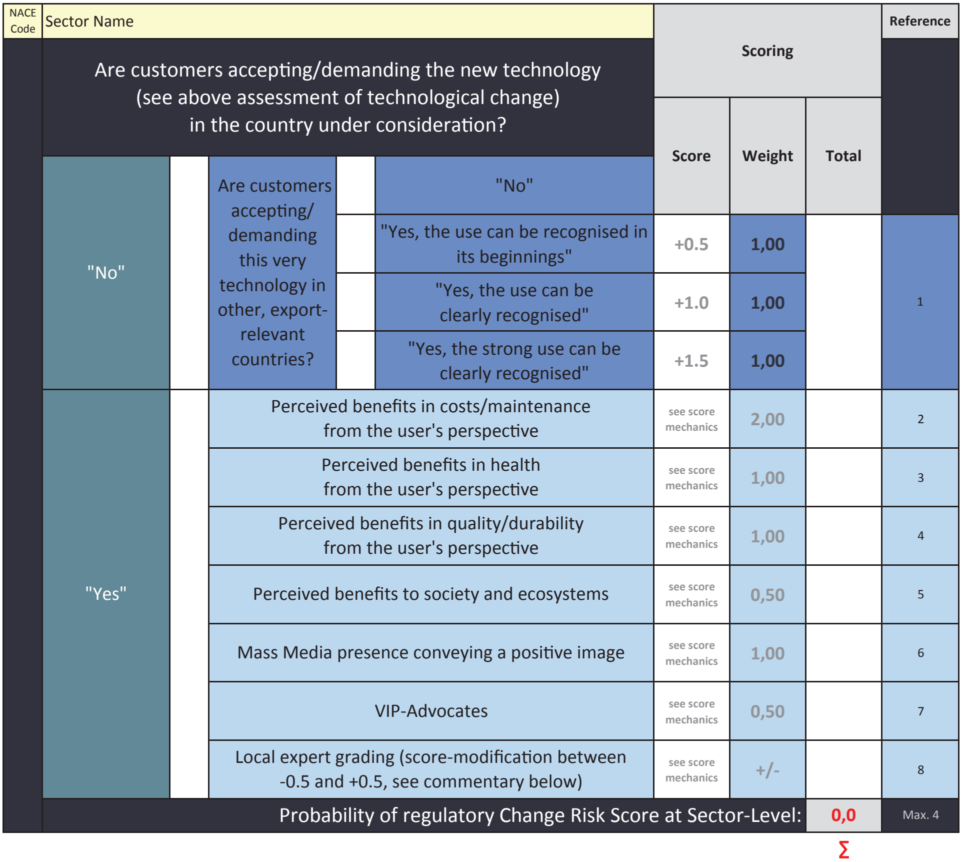
NACE Code	Sector Name			Scoring			Reference
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?			Score	Weight	Total	
	"No"	Is this technology available/ used in this sector in other relevant countries?	"No"				
			"No, to date it is just at theory/ study-level"	+0.5	1,00		1
			"Yes, it is available and used in other relevant countries"	+1.0	1,00		
			"Yes, it is heavily used in other relevant countries"	+1.5	1,00		
	"Yes"	Use in the country under consideration		see score mechanics	1,00		2
		Heavy use in the country under consideration		see score mechanics	1,00		3
		Use in other relevant countries		see score mechanics	0,50		4
		Heavy use in other relevant countries		see score mechanics	1,00		5
		Accepted economic benefit of technology (lower costs and/or higher yields)		see score mechanics	1,50		6
		Accepted strong economic benefit of technology (much lower costs and/or much higher yields)		see score mechanics	1,00		7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		see score mechanics	+/-		8
	Probability of regulatory Change Risk Score at Sector-Level:					0,0	Max. 4
						Σ	

3.10 Sub-scoring for Transition Climate Risk: Customer Behavior

The last indicator to consider is the level of acceptance of the new technology (or the willingness to adapt one's own behavior as explained as has been discussed on the example of the tobacco sector) by the customers. This is based on the essential question "Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?"

Accordingly, the grading question for the “no” answer is: “Are customers accepting/ demanding this very technology in other, export-relevant countries?” Here, instead of referring to various ways of cultural or political connections between countries, the focus is an economic one: If countries are connected in trade, the demand of new technologies/ approaches can greatly be accelerated by the demand/ preferences in the customer-country.

Figure 15: Transition Climate Risk: Customer Behavior



NACE Code	Sector Name					Scoring			Reference
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					Score	Weight	Total	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"				1
					"Yes, the use can be recognised in its beginnings"	+0.5	1,00		
					"Yes, the use can be clearly recognised"	+1.0	1,00		
					"Yes, the strong use can be clearly recognised"	+1.5	1,00		
	"Yes"		Perceived benefits in costs/maintenance from the user's perspective			see score mechanics	2,00		2
			Perceived benefits in health from the user's perspective			see score mechanics	1,00		3
			Perceived benefits in quality/durability from the user's perspective			see score mechanics	1,00		4
			Perceived benefits to society and ecosystems			see score mechanics	0,50		5
			Mass Media presence conveying a positive image			see score mechanics	1,00		6
			VIP-Advocates			see score mechanics	0,50		7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			see score mechanics	+/-		8
	Probability of regulatory Change Risk Score at Sector-Level:							0,0	Max. 4
								Σ	

The indicators for the “yes” answer focus on the different aspects that may act as a driver for customer demand:

1. Perceived benefits in costs/maintenance
2. Perceived benefits in health
3. Perceived benefits in quality/durability
4. Perceived benefits to society and ecosystems
5. Mass Media presence conveying a positive image
6. VIP-Advocates

The weighting emphasizes the fact that economic-based arguments often play a major role in customer decisions and dominate other benefit categories (summed up in the statement of a market-analyzer “ego-benefit always tops eco-benefit”).

4. Results from the Risk Radar for Georgian Economic Sectors

The scoring system of the Risk Radar has been applied to all sectors in Georgia classified as main sectors according to the NACE sector codes (Eurostat 2008). For the sectors A Agriculture and C Manufacturing, the subsectors have also been assessed (see Appendix I). The assessment process was conducted in two stages: first, through desk research to evaluate ESG risks at the sector level using various sources of information, including public and non-public sources, international reports, and comprehensive literature research; and second, through the incorporation of local expertise to assess and refine the evaluations in a collaborative, multi-stakeholder approach. An overview of the results is provided in Figure 16, with detailed tables for sectors with high-risk scores given in Appendix II.

From the assessment, the sectors with the highest risk profile (score 9) are:
- A Agriculture, Forestry and Fishing
- A 2 Forestry and Logging
- D Electricity, Gas, Steam and Air Conditioning Supply
- H Transportation and Storage

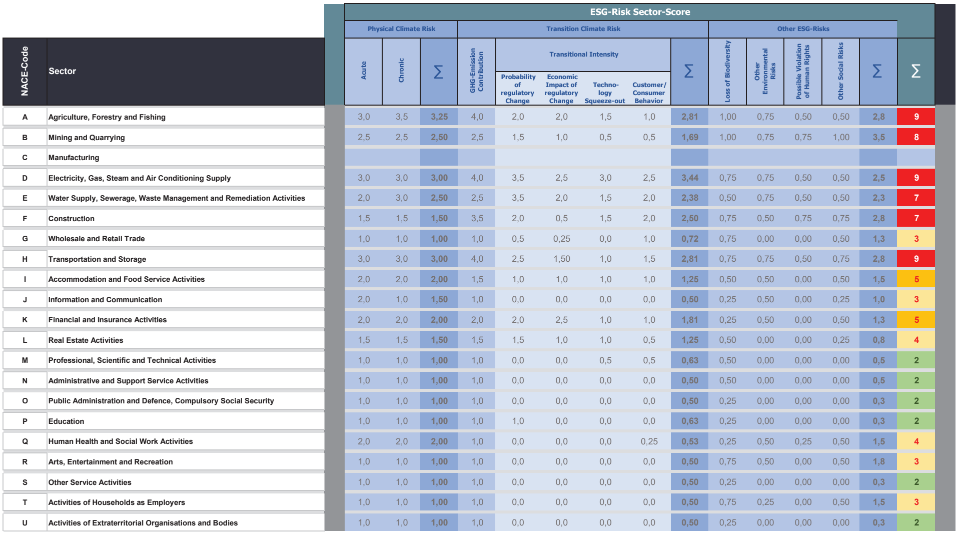
The sectors with a high-risk profile (score 7-8) are:

- A 1.1 Growing of non-perennial Crops
- A 1.2 Growing of perennial Crops
- A 1.4 Animal Production
- A 3 Fishing and Aquaculture
- C 12 Manufacture of Tobacco Products
- C 19 Manufacture of Coke and refined Petroleum Products
- C 20 Manufacture of Chemicals and chemical Products
- C 29 Manufacture of Motor Vehicles, Trailers and semi-Trailers
- E Water Supply, Sewerage, Waste Management and Remediation Activities
- F Construction

These sectors are most affected by either physical climate risks, transition climate risks, or both, and they also significantly contribute to climate change, thereby exacerbating these risks within their sectors. Evidence supporting this—and thus confirming the methodology of the Risk Radar—can be found in the fact that these sectors are highlighted in relevant national documents addressing climate change mitigation and adaptation. These documents include the Fourth National Communication of Georgia under the United Nations Framework Convention on Climate Change and Georgia's Long-Term Low Emission Development Strategy (Ministry of Environmental Protection and Agriculture of Georgia, 2021 and 2023).

Additionally, these sectors are featured in the European Taxonomy (European Union Technical Expert Group on Sustainable Finance, 2020). Many of them are also addressed in the EBA's mapping of climate risk (EBA, 2021b, p. 17 onwards).

Figure 16. Overview of the ESG Risk Radar for Georgian Economic Sectors



NACE-Code	Sector	ESG-Risk Sector-Score														
		Physical Climate Risk			Transition Climate Risk						Other ESG-Risks					
		Acute	Chronic	Σ	GHG-Emission Contribution	Transitional Intensity				Σ	Loss of Biodiversity	Other Environmental Risks	Possible Violation of Human Rights	Other Social Risks	Σ	Σ
						Probability of regulatory Change	Economic Impact of regulatory Change	Techno-logy Squeeze-out	Customer/ Consumer Behavior							
A	Agriculture, Forestry and Fishing	3,0	3,5	3,25	4,0	2,0	2,0	1,5	1,0	2,81	1,00	0,75	0,50	0,50	2,8	9
B	Mining and Quarrying	2,5	2,5	2,50	2,5	1,5	1,0	0,5	0,5	1,69	1,00	0,75	0,75	1,00	3,5	8
C	Manufacturing															
D	Electricity, Gas, Steam and Air Conditioning Supply	3,0	3,0	3,00	4,0	3,5	2,5	3,0	2,5	3,44	0,75	0,75	0,50	0,50	2,5	9
E	Water Supply, Sewerage, Waste Management and Remediation Activities	2,0	3,0	2,50	2,5	3,5	2,0	1,5	2,0	2,38	0,50	0,75	0,50	0,50	2,3	7
F	Construction	1,5	1,5	1,50	3,5	2,0	0,5	1,5	2,0	2,50	0,75	0,50	0,75	0,75	2,8	7
G	Wholesale and Retail Trade	1,0	1,0	1,00	1,0	0,5	0,25	0,0	1,0	0,72	0,75	0,00	0,00	0,50	1,3	3
H	Transportation and Storage	3,0	3,0	3,00	4,0	2,5	1,50	1,0	1,5	2,81	0,75	0,75	0,50	0,75	2,8	9
I	Accommodation and Food Service Activities	2,0	2,0	2,00	1,5	1,0	1,0	1,0	1,0	1,25	0,50	0,50	0,00	0,50	1,5	5
J	Information and Communication	2,0	1,0	1,50	1,0	0,0	0,0	0,0	0,0	0,50	0,25	0,50	0,00	0,25	1,0	3
K	Financial and Insurance Activities	2,0	2,0	2,00	2,0	2,0	2,5	1,0	1,0	1,81	0,25	0,50	0,00	0,50	1,3	5
L	Real Estate Activities	1,5	1,5	1,50	1,5	1,5	1,0	1,0	0,5	1,25	0,50	0,00	0,00	0,25	0,8	4
M	Professional, Scientific and Technical Activities	1,0	1,0	1,00	1,0	0,0	0,0	0,5	0,5	0,63	0,50	0,00	0,00	0,00	0,5	2
N	Administrative and Support Service Activities	1,0	1,0	1,00	1,0	0,0	0,0	0,0	0,0	0,50	0,50	0,00	0,00	0,00	0,5	2
O	Public Administration and Defence, Compulsory Social Security	1,0	1,0	1,00	1,0	0,0	0,0	0,0	0,0	0,50	0,25	0,00	0,00	0,00	0,3	2
P	Education	1,0	1,0	1,00	1,0	1,0	0,0	0,0	0,0	0,63	0,25	0,00	0,00	0,00	0,3	2
Q	Human Health and Social Work Activities	2,0	2,0	2,00	1,0	0,0	0,0	0,0	0,25	0,53	0,25	0,50	0,25	0,50	1,5	4
R	Arts, Entertainment and Recreation	1,0	1,0	1,00	1,0	0,0	0,0	0,0	0,0	0,50	0,75	0,50	0,00	0,50	1,8	3
S	Other Service Activities	1,0	1,0	1,00	1,0	0,0	0,0	0,0	0,0	0,50	0,25	0,00	0,00	0,00	0,3	2
T	Activities of Households as Employers	1,0	1,0	1,00	1,0	0,0	0,0	0,0	0,0	0,50	0,75	0,25	0,00	0,50	1,5	3
U	Activities of Extraterritorial Organisations and Bodies	1,0	1,0	1,00	1,0	0,0	0,0	0,0	0,0	0,50	0,25	0,00	0,00	0,00	0,3	2

To help understand the scoring results, a few specific aspects of the assessment should be noted:

1. **Bottom Line of Climate Risks:**
    - Naturally, the exposure of different sectors to physical and transition risks varies significantly. Sectors closely connected to nature face more immediate and potentially devastating consequences from extreme weather events. For instance, even a minor weather event such as a hailstorm can destroy a farmer's entire harvest, whereas manufacturing companies might only suffer minor damage to the roof of a production hall or vehicles in the fleet. Larger events, however, will cause damage across nearly all sectors. Thus, no sector is risk-free, and an assessment of 1 is used as the minimum for acute physical climate risks for all sectors.
2. **Inheritance in Physical Risks:**
    - Many sectors are interconnected, leading to the propagation of risks from one sector to affiliated ones. For example, in the food sector (C10), there is a strong dependency on the agricultural sector, which has a particularly high-risk profile. Consequently, food manufacturing not only considers the physical climate risk of manufacturing but also inherits a risk premium from agriculture due to the exposure affecting its supply chain.

3. **Inheritance in Emissions:**
    - The principle of inheritance is also considered in estimating emission levels. Sectors receive an upgrade in emissions if their supply chain has particularly high emissions. For instance, in the food sector (C10), the manufacturing of meat products is deemed especially harmful due to its connection with animal production (A1.4), which accounts for its high emission estimate. In comparison, the beverage sector (C11), which has a strong connection with the growing of perennial crops (A1.2, especially wine and other fruit-based beverages), has a considerably lower emission profile, resulting in a lower emission assessment for sector C11.
4. **Scope 3 in Emissions:**
    - Following the systematic approach of the internationally accepted Greenhouse Gas Protocol, emissions are clustered into three scopes (GHG Protocol 2011): Scope 1 includes only the direct emissions of the company itself, Scope 2 considers upstream emissions from the value chain, and Scope 3 considers emissions from the products across their life cycles. While most publications assess emissions as Scope 2, the Risk Radar focuses on Scope 3. Therefore, if a sector has especially high emissions resulting from its products (e.g., automotive sector C29), the emission assessment is upgraded.

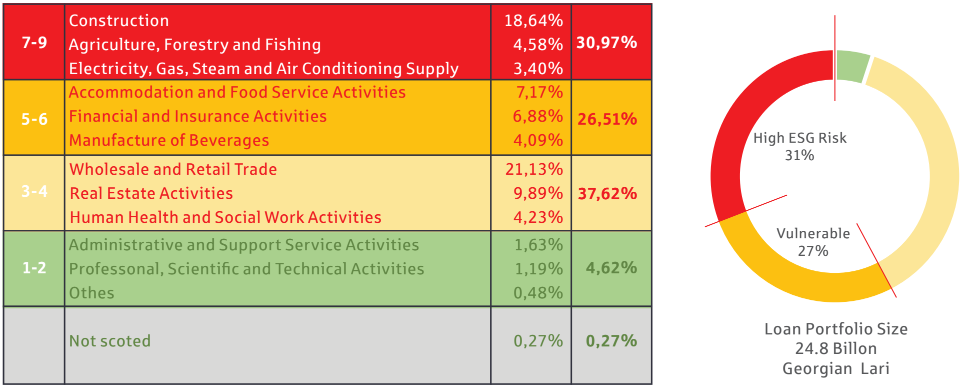
5. Application of the Risk Radar - Heat Map for Georgian Financial Sector

In passage number 36 of “Principles for the Effective Management and Supervision of Climate-Related Financial Risks,” the Basel Committee recommends: “Banks should also identify, measure, evaluate, monitor, report and manage the concentrations within and between risk types associated with climate-related financial risks. For example, banks could use metrics or heat maps to assess and monitor concentration of exposure to geographies and sectors with higher climate-related risk” (BIS 2022, p. 6).

With the sector scores, it is possible to formulate such a heat map, which provides an overview of the concentrations of climate-related and other ESG risks in the loan portfolio of a bank. Such a heat map can be created for individual financial institutions or aggregated for an entire country.

The heat map below was created based on the stock of loans to legal entities in Georgia as of December 2023. Please note that only corporate loans are included in this analysis. If consumer loans were included, the share of the vulnerable and high-risk areas of the loan portfolio would be considerably smaller, as consumer loans are significantly less affected by ESG risks compared to corporate loans.

Figure 17. ESG Risks Heat Map for Georgian Banking Sector



7-9	Construction	18,64%	**30,97%**
	Agriculture, Forestry and Fishing	4,58%	
	Electricity, Gas, Steam and Air Conditioning Supply	3,40%	
5-6	Accommodation and Food Service Activities	7,17%	**26,51%**
	Financial and Insurance Activities	6,88%	
	Manufacture of Beverages	4,09%	
3-4	Wholesale and Retail Trade	21,13%	**37,62%**
	Real Estate Activities	9,89%	
	Human Health and Social Work Activities	4,23%	
1-2	Administrative and Support Service Activities	1,63%	**4,62%**
	Professonal, Scientific and Technical Activities	1,19%	
	Othes	0,48%	
	Not scoted	0,27%	**0,27%**

Source: NBG

Based on the findings, approximately 31% of the total loan portfolio to legal entities falls into the High ESG risk category (Score 7-9), with the construction sector holding 18.64% of the total portfolio. In the Vulnerable ESG risk category (Score 5-6), about 26.1% of the total corporate loan portfolio is represented, with the accommodation and food service activities sector holding the highest share at 7.17%. Thus, approximately 58% of the total loan portfolio to legal entities is potentially materially exposed to ESG risks and requires further assessment.

The heat map is independent of portfolio size and can be applied to very small banks as well as very large institutions using the risk sector scores given in Figure 17. It provides an initial overview of the extent to which a bank is affected by ESG risks.

For a more detailed risk assessment at the counterparty level, individual scoring modifiers for each sector need to be defined. This allows the use of a short checklist to analyze the extent to which a specific company shares the same ESG risk as its sector and in which aspects this risk score (often considered a “worst case” within the sector) is adequate. Based on this analysis, limits at the counterparty level, pricing consequences, and collateral requirements can be formulated, further enhancing the completeness of the ESG risk management process.

References:

Basel Committee on Banking Supervision (2022): Principles for the effective management and supervision of climate-related financial risks. Basel: BIS

Borge, D. (2001): The Book of Risk. New York et al.: John Wiley.

EBA – European Banking Authority (2020): Action Plan on Sustainable Finance. Paris: EBA.

EBA – European Banking Authority (2021): EBA Report on Management and Supervision of ESG Risk for Credit Institutions and Investment Firms. Paris: EBA.

EBA European Banking Authority (2021b): Mapping climate risk: Main findings from the EU-wide pilot exercise. Paris: EBA.

European Union Technical Expert Group on Sustainable Finance (2020): Taxonomy Report - Technical Annex. Brussels: The European Commission.

Eurostat (2008): NACE Rev. 2 - Statistical classification of economic activities in the European Community. Luxembourg: European Communities.

Ministry of Environmental Protection and Agriculture of Georgia (2021): Fourth National Communication of Georgia under the United Nations Framework Convention on Climate Change. Tbilisi: Ministry of Environmental Protection and Agriculture of Georgia.

Ministry of Environmental Protection and Agriculture of Georgia (2023): Georgia's Long-Term Low Emission Development Strategy. Tbilisi: Ministry of Environmental Protection and Agriculture of Georgia.

NBG – National Bank of Georgia (2022): Climate-related Risk Radar for Georgian economic sectors and its possible application for the financial sector. Tbilisi: NBG

NBG – National Bank of Georgia (2023): ESG Guidelines: Through Double Materiality Perspective. Tbilisi: NBG

Schaltegger, S.; Burritt, R. & Petersen, H. (2003): An Introduction to Corporate Environmental Management; Striving for Sustainability. Sheffield: Greenleaf.

Annex I: Overview of the Risk Radar for Georgian Economic Sectors

NACE-Code	Sector	ESG-Risk Sector-Score														
		Physical Climate Risk			Transition Climate Risk						Other ESG-Risks					
		Acute	Chronic	Σ	GHG-Emission Contribution	Transitional Intensity				Σ	Loss of Biodiversity	Other Environmental Risks	Possible Violation of Human Rights	Other Social Risks	Σ	Σ
						Probability of regulatory Change	Economic Impact of regulatory Change	Techno-logy Squeeze-out	Customer/ Consumer Behavior							
A	Agriculture, Forestry and Fishing	3.0	3.5	3.25	4.0	2.0	2.0	1.5	1.0	2.81	1.00	0.75	0.50	0.50	2.8	9
A 1.1	Growing of non-perennial Crops	3.0	3.0	3.00	4.0	2.0	2.0	1.5	1.0	2.81	1.00	0.50	0.50	0.50	2.5	8
A 1.2	Growing of perennial Crops	3.0	2.0	2.50	4.0	2.0	2.0	1.5	1.0	2.81	1.00	0.75	0.50	0.50	2.8	8
A 1.4	Animal Production	3.0	3.5	3.25	4.0	1.5	0.0	1.5	1.0	2.50	0.75	0.50	0.50	0.50	2.3	8
A 2	Forestry and Logging	3.0	4.0	3.50	4.0	2.5	2.5	1.5	0.5	2.88	1.00	0.75	0.50	0.50	2.8	9
A 3	Fishing and Aquaculture	2.5	2.5	2.50	4.0	2.5	1.5	1.0	0.5	2.69	0.75	0.50	0.50	0.50	2.3	7
B	Mining and Quarrying	2.5	2.5	2.50	2.5	1.5	1.0	0.5	0.5	1.69	1.00	0.75	0.75	1.00	3.5	8
C	Manufacturing															
C 10	Manufacture of Food Products	2.0	2.5	2.25	2.0	2.0	1.0	1.0	1.0	1.63	0.75	0.50	0.50	0.50	2.3	6
C 11	Manufacture of Beverages	1.5	2.0	1.75	2.0	2.0	1.0	1.0	1.0	1.63	0.75	0.50	0.00	0.50	1.8	5
C 12	Manufacture of Tobacco Products	2.0	2.5	2.25	3.0	3.0	3.0	2.0	3.0	2.88	1.00	0.50	0.75	1.00	3.3	8
C 13	Manufacture of Textiles	1.5	1.5	1.50	2.5	2.0	1.0	0.5	0.5	1.75	0.75	0.50	0.50	0.50	2.3	6
C 14	Manufacture of wearing Apparel	1.0	1.5	1.25	2.0	1.0	1.0	0.5	0.5	1.38	0.75	0.50	0.50	0.50	2.3	5
C 15	Manufacture of Leather and related Products	1.0	1.5	1.25	2.0	2.0	1.0	0.5	0.5	1.50	0.25	0.50	0.50	0.50	1.8	5
C 16	Manufacture of Wood and of Products of Wood and Cork, except Furniture; Manufacture of Articles of Straw and Plaiting Material	1.5	1.5	1.50	2.0	1.0	1.0	0.0	0.0	1.25	1.00	0.50	0.00	0.50	2.0	5
C 17	Manufacture of Paper and Paper Products	1.5	2.0	1.75	2.5	2.0	1.5	1.0	1.0	1.94	0.75	0.50	0.00	0.50	1.8	5
C 18	Printing and Reproduction of Recorded Media	1.0	1.0	1.00	1.0	1.0	1.0	1.0	1.0	1.00	0.75	0.00	0.00	0.00	0.8	3
C 19	Manufacture of Coke and refined Petroleum Products	2.5	2.5	2.50	3.5	3.5	2.5	3.0	3.0	3.25	0.25	0.75	0.50	0.50	2.0	8
C 20	Manufacture of Chemicals and chemical Products	3.0	2.5	2.75	3.5	3.5	1.0	1.0	1.0	2.56	0.50	0.75	0.50	0.50	2.3	8
C 21	Manufacture of basic pharmaceutical Products and pharmaceutical Preparations	2.0	2.5	2.25	2.0	2.0	1.0	0.0	0.5	1.44	0.50	0.50	0.00	0.50	1.5	5
C 22	Manufacture of Rubber and plastic Products	1.0	1.0	1.00	4.0	2.0	1.0	0.5	1.0	2.56	0.50	0.50	0.00	0.50	1.5	5
C 23	Manufacture of other non-metallic mineral Products	1.5	1.5	1.50	3.0	2.0	1.0	0.5	0.5	2.00	0.50	0.50	0.00	0.50	1.5	5
C 24	Manufacture of basic Metals	1.0	1.0	1.00	4.0	2.0	1.5	0.0	0.5	2.50	0.75	0.50	0.00	0.50	1.8	5
C 25	Manufacture of fabricated metal Products, except Machinery and Equipment	1.0	1.0	1.00	4.0	2.0	1.5	0.5	0.5	2.56	0.75	0.50	0.00	0.50	1.8	5
C 26	Manufacture of Computer, electronic and optical Products	1.0	1.0	1.00	2.0	1.0	1.0	0.0	0.5	1.31	0.75	0.50	0.00	0.00	1.3	4
C 27	Manufacture of electrical Equipment	1.0	1.0	1.00	2.0	1.0	1.0	0.0	0.5	1.31	0.50	0.50	0.00	0.00	1.0	3
C 28	Manufacture of Machinery and Equipment	1.5	1.5	1.50	2.0	2.0	1.0	0.0	0.0	1.38	0.50	0.50	0.00	0.50	1.5	4
C 29	Manufacture of Motor Vehicles, Trailers and semi-Trailers	1.5	2.0	1.75	2.0	3.5	2.5	3.0	2.0	2.38	0.50	0.75	0.50	0.75	2.5	7
C 30	Manufacture of other Transport Equipment	1.5	1.5	1.50	2.0	2.0	1.0	0.0	0.5	1.44	0.50	0.50	0.50	0.50	2.0	5
C 31	Manufacture of Furniture	1.0	1.0	1.00	2.0	1.0	1.0	0.0	0.0	1.25	0.50	0.25	0.00	0.00	0.8	3
C 32	Other manufacturing	1.0	1.0	1.00	2.0	2.0	1.0	0.0	0.5	1.44	0.75	0.50	0.00	0.00	1.3	4
C 33	Repair and installation of Machinery and Equipment	1.0	1.0	1.00	1.0	1.5	1.5	0.0	0.0	0.88	0.50	0.50	0.00	0.00	1.0	3
D	Electricity, Gas, Steam and Air Conditioning Supply	3.0	3.0	3.00	4.0	3.5	2.5	3.0	2.5	3.44	0.75	0.75	0.50	0.50	2.5	9
E	Water Supply, Sewerage, Waste Management and Remediation Activities	2.0	3.0	2.50	2.5	3.5	2.5	1.5	2.0	2.44	0.50	0.75	0.50	0.50	2.3	7
F	Construction	1.5	1.5	1.50	3.5	2.5	2.0	1.5	2.0	2.75	0.75	0.50	0.75	0.75	2.8	7
G	Wholesale and Retail Trade	1.0	1.0	1.00	1.0	0.5	0.25	0.0	1.0	0.72	0.75	0.00	0.00	0.50	1.3	3
H	Transportation and Storage	3.0	3.0	3.00	4.0	2.5	1.50	1.0	1.5	2.81	0.75	0.75	0.50	0.75	2.8	9
I	Accommodation and Food Service Activities	2.0	2.0	2.00	1.5	1.0	1.0	1.0	1.0	1.25	0.50	0.50	0.00	0.50	1.5	5
J	Information and Communication	2.0	1.0	1.50	1.0	0.0	0.0	0.0	0.0	0.50	0.25	0.50	0.00	0.25	1.0	3
K	Financial and Insurance Activities	2.0	2.0	2.00	2.0	2.0	2.5	1.0	1.0	1.81	0.25	0.50	0.00	0.50	1.3	5
L	Real Estate Activities	1.5	1.5	1.50	1.5	1.5	1.0	1.0	0.5	1.25	0.50	0.00	0.00	0.25	0.8	4
M	Professional, Scientific and Technical Activities	1.0	1.0	1.00	1.0	0.0	0.0	0.5	0.5	0.63	0.50	0.00	0.00	0.00	0.5	2
N	Administrative and Support Service Activities	1.0	1.0	1.00	1.0	0.0	0.0	0.0	0.0	0.50	0.50	0.00	0.00	0.00	0.5	2
O	Public Administration and Defence, Compulsory Social Security	1.0	1.0	1.00	1.0	0.0	0.0	0.0	0.0	0.50	0.25	0.00	0.00	0.00	0.3	2
P	Education	1.0	1.0	1.00	1.0	1.0	0.0	0.0	0.0	0.63	0.25	0.00	0.00	0.00	0.3	2
Q	Human Health and Social Work Activities	2.0	2.0	2.00	1.0	0.0	0.0	0.0	0.25	0.53	0.25	0.50	0.25	0.50	1.5	4
R	Arts, Entertainment and Recreation	1.0	1.0	1.00	1.0	0.0	0.0	0.0	0.0	0.50	0.75	0.50	0.00	0.50	1.8	3
S	Other Service Activities	1.0	1.0	1.00	1.0	0.0	0.0	0.0	0.0	0.50	0.25	0.00	0.00	0.00	0.3	2
T	Activities of Households as Employers	1.0	1.0	1.00	1.0	0.0	0.0	0.0	0.0	0.50	0.75	0.25	0.00	0.50	1.5	3
U	Activities of Extraterritorial Organisations and Bodies	1.0	1.0	1.00	1.0	0.0	0.0	0.0	0.0	0.50	0.25	0.00	0.00	0.00	0.3	2

Annex II: Detailed Sector Assessments for the High-Risk Sectors

A Agriculture

A 1.1 Growing of non-perennial crops

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
A 1.1	**Agriculture, Forestry and Fishing - growing of non-perennial crops**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		3,0		3,0	1
		Chronic		3,0			2
	Transition Climate Risk	GHG-Emission Contribution		4,0		2,81	3
		Transitional Intensity	Probability of regulatory Change	2,0	1,6		4
			Economic Impact of regulatory Change	2,0			5
			Technological Change	1,5			6
			Customer Behavior	1,0			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	1,00	2,5	8
		Other Environmental Risks		Add-on Factor	0,5		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
					ESG-Risk Score at Sector-Level:	**8**	8,31

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Müting, A. (2017): Ecoagriculture in Dedoplistskaro, Georgia. How to make agriculture more biodiversity-friendly. https://biodivers-southcaucasus.org/uploads/files/Policy%20Brief%20Ecoagriculture%20template_160317.pdf	1,00
9	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia	0,5
10	United States Department of State (2022): 2021 Country Reports on Human Rights Practices: Georgia. https://www.state.gov/reports/2021-country-reports-on-human-rights-practices/georgia/ The source points out that minors are employed in the agricultural sector in some cases.	0,5
11	Rueter, G. (2022): Rising pesticides use harming farmers, environment: report. https://www.dw.com/en/pesticide-atlas-2022/a-60390427	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

A 1.1	Agriculture, Forestry and Fishing - growing of non-perennial crops					Scoring			Reference
	Are acute climate events in the country/region already relevant for the sector under consideration?					Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		1,00	0,00	1
					"Yes, very likely"		1,00		
	"Yes"	X			Observed loss of assets/property	0,50	1,00	0,50	2
					Expected impact on revenue	0,50	1,00	0,50	3
					Expected impact on costs	0,75	1,00	0,75	4
					1-3 expected to increase in the future	0,50	1,00	0,50	5
					Lack of adaptability of the business model	0,75	1,00	0,75	6
					Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)	0,00	1,00	0,00	7
					Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		+/-	0,00	8
	Acute Climate Risk Score at Sector-Level:							3,0	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Shatberashvili, N.; Artsivadze, K.; Rucevska, I. et al. (2016): Outlook on climate change adaptation in the South Caucasus mountains. SERIES, MOUNTAIN ADAPTATION OUTLOOK. https://www.researchgate.net/profile/Kakha-Artsivadze/publication/301547624_Outlook_on_Climate_Change_Adaptation_in_the_South_Caucasus_Mountains/links/57188dd908aed8a339e5bd8a/Outlook-on-Climate-Change-Adaptation-in-the-South-Caucasus-Mountains.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Shatberashvili, N.; Artsivadze, K.; Rucevska, I. et al. (2016): Outlook on climate change adaptation in the South Caucasus mountains. SERIES, MOUNTAIN ADAPTATION OUTLOOK. https://www.researchgate.net/profile/Kakha-Artsivadze/publication/301547624_Outlook_on_Climate_Change_Adaptation_in_the_South_Caucasus_Mountains/links/57188dd908aed8a339e5bd8a/Outlook-on-Climate-Change-Adaptation-in-the-South-Caucasus-Mountains.pdf	The source addresses both acute and chronic climatic events that, for instance, can reduce crop quality.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	3	Ahouissoussi, N.; Neumann, J. E.; Srivastava, J. P. (Eds.) (2014): Building resilience to climate change in South Caucasus agriculture. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=FNQ8BAAAQBAJ&oi=fnd&pg=PP1&dq=agriculture+georgia+Kaukasus+climate+change&ots=S3D5VUSrrE&sig=ixdvzsS0gOKUQhz-cMPVvDTETM8#v=onepage&q=agriculture%20georgia%20Kaukasus%20climate%20change&f=false		0,75
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Whitt, J.; Gordon, S. (2023): This is the economic cost of extreme weather. https://www.weforum.org/agenda/2023/01/extreme-weather-economic-cost-wef23/		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Ahouissoussi, N.; Neumann, J. E.; Srivastava, J. P. (Eds.) (2014): Building resilience to climate change in South Caucasus agriculture. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=FNQ8BAAAQBAJ&oi=fnd&pg=PP1&dq=agriculture+georgia+Kaukasus+climate+change&ots=S3D5VUSrrE&sig=ixdvzsS0gOKUQhz-cMPVvDTETM8#v=onepage&q=agriculture%20georgia%20Kaukasus%20climate%20change&f=false		0,75
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

A 1.1	Agriculture, Forestry and Fishing - growing of non-perennial crops				**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?	"No"				
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property		0,50	1,00	0,50	2
			Expected impact on revenue		0,50	1,00	0,50	3
			Expected impact on costs		0,50	1,00	0,50	4
			1-3 expected to increase in the future		0,50	1,00	0,50	5
			Lack of adaptability of the business model		0,75	1,00	0,75	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)		0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		0,00	+/-	0,00	8
	Chronic Climate Risk Score at Sector-Level:						3,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Shatberashvili, N.; Artsivadze, K.; Rucevska, I. et al. (2016): Outlook on climate change adaptation in the South Caucasus mountains. SERIES, MOUNTAIN ADAPTATION OUTLOOK. https://www.researchgate.net/profile/Kakha-Artsivadze/publication/301547624_Outlook_on_Climate_Change_Adaptation_in_the_South_Caucasus_Mountains/links/57188dd908aed8a339e5bd8a/Outlook-on-Climate-Change-Adaptation-in-the-South-Caucasus-Mountains.pdf	In addition to classic infrastructure, the amount of fertile land is one criteria that has to be considered here.	0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Shatberashvili, N.; Artsivadze, K.; Rucevska, I. et al. (2016): Outlook on climate change adaptation in the South Caucasus mountains. SERIES, MOUNTAIN ADAPTATION OUTLOOK. https://www.researchgate.net/profile/Kakha-Artsivadze/publication/301547624_Outlook_on_Climate_Change_Adaptation_in_the_South_Caucasus_Mountains/links/57188dd908aed8a339e5bd8a/Outlook-on-Climate-Change-Adaptation-in-the-South-Caucasus-Mountains.pdf	The source addresses both acute and chronic climatic events that, for instance, can reduce crop quality.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Shatberashvili, N.; Artsivadze, K.; Rucevska, I. et al. (2016): Outlook on climate change adaptation in the South Caucasus mountains. SERIES, MOUNTAIN ADAPTATION OUTLOOK. https://www.researchgate.net/profile/Kakha-Artsivadze/publication/301547624_Outlook_on_Climate_Change_Adaptation_in_the_South_Caucasus_Mountains/links/57188dd908aed8a339e5bd8a/Outlook-on-Climate-Change-Adaptation-in-the-South-Caucasus-Mountains.pdf	As a consequence of climate change, more areas will need to be irrigated, which will involve higher costs.	0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Hatfield, J. L.; Boote, K. J.; Kimball, B. A. et al. (2011): Climate Impacts on Agriculture: Implications for Crop Production. Agronomy Journal. Vol. 103. Issue 2. pp. 351-370. https://acsess.onlinelibrary.wiley.com/doi/abs/10.2134/agronj2010.0303		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Ahouissoussi, N.; Neumann, J. E.; Srivastava, J. P. (Eds.) (2014): Building resilience to climate change in South Caucasus agriculture. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=FNQ8BAAAQBAJ&oi=fnd&pg=PP1&dq=agriculture+georgia+Kaukasus+climate+change&ots=S3D5VUSrrE&sig=ixdvzsS0gOKUQhz-cMPVvDTETM8#v=onepage&q=agriculture%20georgia%20Kaukasus%20climate%20change&f=false		0,75
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
A 1.1	Agriculture, Forestry and Fishing - growing of non-perennial crops				**Scoring**		**Reference**
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%				**X**	4,00	
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%						
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"	**X**	Add-on Factor 1		1,00	
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					4,0	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		4,00
2	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia		1,00
3			0,00

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE Sector

A 1.1	Agriculture, Forestry and Fishing - growing of non-perennial crops				**Scoring**			**Reference**
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?				**Score**	**Weight**	**Total**	
"No"		Is this kind of regulation already present in other relevant countries?		"No"				
				"Yes, it is planned"		**1,00**	0,00	1
				"Yes, it is established"		**1,00**		
				"Yes, it is established and a further extention is planned"		**1,00**		
"Yes"	**X**	Announced in the country under consideration			0,75	1,00	0,75	2
		Established in the country under consideration			0,00	2,00	0,00	3
		Further extension of this very regulation announced			0,00	0,50	0,00	4
		Announced in other relevant countries			0,50	0,50	0,25	5
		Established in other relevant countries			0,75	1,00	0,75	6
		Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,25	1,00	0,25	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:						2,0	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123 Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category	1	Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law	Indicator is NOT given: To date, there is no law that regulates issues related to climate change. As can be seen from the quoted source, this is currently being prepared.	0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	European Commission (2022): Green Deal: EU agrees law to fight global deforestation and forest degradation driven by EU production and consumption. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7444	Although the reference refers to deforestation, there is a connection via land use change. This is likely to lead to restrictions on agriculture.	0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Senate of the United States (2021): FOREST Act of 2021. https://www.congress.gov/117/bills/s2950/BILLS-117s2950is.xml	Although the reference refers to deforestation, there is a connection via land use change. This is likely to lead to restrictions on agriculture.	0,75
	Indicator is strongly pronounced						
7	Indicator is given	x	Source Category	1	Martus, E.; Petersson, M. (2020): Can Georgia develop a strong policy on climate change?. https://www.opendemocracy.net/en/odr/can-georgia-develop-strong-policy-climate-change/		0,25
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 1.1	Agriculture, Forestry and Fishing - growing of non-perennial crops					**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
			Strong effect on the business model			0,00	1,00	0,00	3
			1-2 expected to increase in the future			0,25	0,50	0,13	4
			1 or 2 obvious in other relevant countries			0,50	1,00	0,50	5
			Impact on the value chain			0,00	0,50	0,00	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,00	+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							2,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	x	Source Category	**3**	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	**1**	Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law	As the Climate Law is currently being implemented, a stronger effect can be expected in the future.	0,25
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	**2**	Zhunusova, E.; Ahimbisibwe, V.; Sadeghi, A.; Toledo-Aceves, T.; Kabwe, G.; Günter, S. (2022): Potential impacts of the proposed EU regulation on deforestation-free supply chains on smallholders, indigenous peoples, and local communities in producer countries outside the EU. Forest Policy and Economics. 143. https://doi.org/10.1016/j.forpol.2022.102817		0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

A 1.1	Agriculture, Forestry and Fishing - growing of non-perennial crops					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		1,00	0,00	1
					"Yes, it is available and used in other relevant countries"		1,00		
					"Yes, it is heavily used in other relevant countries"		1,00		
	"Yes"	X	Use in the country under consideration			0,50	1,00	0,50	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,50	1,50	0,75	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,00	+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							1,5	Max. 4

∑

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	**2**	Nadiradze, K. (2016): Organic Farming as great challenge for Georgian farmers. Proceedings of the 17th International Conference on Organic Fruit-Growing. Hohenheim, Germany. pp. 15-17. https://www.ecofruit.net/wp-content/uploads/2020/04/65_Nadiradze_295bis297.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	**2**	Sahota, A. (2023): The Global Market for Organic Food & Drink, at: The World of Organic Agriculture. Statistics and Emerging Trends 2023. Research Institute of Organic Agriculture FiBL, Frick, and IFOAM – Organics International. Edited by Willer, H.; Schlatter, B.; Trávníček, J.. Bonn. https://www.fibl.org/fileadmin/documents/shop/1254-organic-world-2023.pdf		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	**2**	FAO – Food and Agriculture Organization of the United Nations (without date): Organic Agriculture and Climate Change. https://www.fao.org/organicag/oa-specialfeatures/oa-climatechange/en/		0,50
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

A 1.1	Agriculture, Forestry and Fishing - growing of non-perennial crops					**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"				
					"Yes, the use can be recognised in its beginnings"		**1,00**	0,00	1
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,00	2,00	0,00	2
			Perceived benefits in health from the user's perspective			0,50	1,00	0,50	3
			Perceived benefits in quality/durability from the user's perspective			0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems			0,75	0,50	0,38	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Customer Behavior Risk Score at Sector-Level:							1,0	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category	2	Brown, C.; Sperow, M. (2005): Examining the cost of an all-organic diet. Journal of Food Distribution Research. Vol. 36. No. 856-2016-57427. pp. 20-26.	Indicator is NOT given: Organic food has comparatively higher costs.	0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Lairon, D. (2010): Nutritional quality and safety of organic food. A review. Agronomy for sustainable development. Vol. 30. pp. 33–41. https://doi.org/10.1051/agro/2009019		0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	2	FAO – Food and Agriculture Organization of the United Nations (without date): What are the environmental benefits of organic agriculture?. https://www.fao.org/organicag/oa-faq/oa-faq6/en/		0,75
	Indicator is strongly pronounced	x					
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category	1	Potters, J. (2018): Meghan Markle, Taylor Swift, and Other Celebrities You Never Knew Promoted Fast Food. https://www.marieclaire.com/celebrity/g22746554/celebrities-fast-food-advertisements/ People For The Ethical Treatment Of Animals (2017): Kylie Jenner Is Trying Vegan—and We're All About It. https://www.peta.org/blog/kylie-jenner-vegan/	Indicator is NOT given: Although some VIP's promote alternative lifestyles such as veganism, more advertise unsustainable products such as fast food.	0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

A 1.2 Growing of perennial Crops

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

A 1.2	Agriculture, Forestry and Fishing - Growing of perennial Crops			Scoring			Reference
	Physical Climate Risk	Acute		3,0		2,5	1
		Chronic		2,0			2
	Transition Climate Risk	GHG-Emission Contribution		4,0		2,81	3
		Transitional Intensity	Probability of regulatory Change	2,0	1,6		4
			Economic Impact of regulatory Change	2,0			5
			Technological Change	1,5			6
			Customer Behavior	1,0			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	1,0	2,8	8
		Other Environmental Risks		Add-on Factor	0,75		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
				ESG-Risk Score at Sector-Level:		8	8,06

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Müting, A. (2017): Ecoagriculture in Dedoplistskaro, Georgia. How to make agriculture more biodiversity-friendly. https://biodivers-southcaucasus.org/uploads/files/Policy%20Brief%20Ecoagriculture%20template_160317.pdf	1,0
9	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia	0,8
10	United States Department of State (2022): 2021 Country Reports on Human Rights Practices: Georgia. https://www.state.gov/reports/2021-country-reports-on-human-rights-practices/georgia/ The source points out that minors are employed in the agricultural sector in some cases.	0,5
11	Rueter, G. (2022): Rising pesticides use harming farmers, environment: report. https://www.dw.com/en/pesticide-atlas-2022/a-60390427	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

A 1.2	Agriculture, Forestry and Fishing - Growing of perennial Crops				**Scoring**			**Reference**
	Are acute climate events in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?	"No"				1
				"Yes"		**1,00**	0,00	
				"Yes, very likely"		**1,00**		
	"Yes"	**x**	Observed loss of assets/property		0,50	1,00	0,50	2
			Expected impact on revenue		0,75	1,00	0,75	3
			Expected impact on costs		0,50	1,00	0,50	4
			1-3 expected to increase in the future		0,50	1,00	0,50	5
			Lack of adaptability of the business model		0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			+/-	0,00	8
						Acute Climate Risk Score at Sector-Level:	3,0	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Yes						
	Yes, very likely						
2	Indicator is given	**x**	Source Category	**2**	Ames, G. K.; Dufour, R. (2014): Climate Change and Perennial Fruit and Nut Production: Investing in Resilience in Uncertain Times. https://attra.ncat.org/wp-content/uploads/2022/10/climate_change_fruit_nut_production.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given	**x**	Source Category	**3**	Ministry of Environment and Natural Resources Protection of Georgia; Ministy of Agriculture Georgia (2017): Gaps and Needs analysis and a Roadmap for Preparing the National Adaptation Plan of Agriculture in Georgia.	The source points out that due to climate change, hail is more frequent and affects fruit and vines, and therefore revenue.	0,75
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**2**	Ames, G. K.; Dufour, R. (2014): Climate Change and Perennial Fruit and Nut Production: Investing in Resilience in Uncertain Times. https://attra.ncat.org/wp-content/uploads/2022/10/climate_change_fruit_nut_production.pdf	The source mentions various negative effects, which will inevitably be accompanied by additional costs.	0,50
	Indicator is strongly pronounced						
5	Indicator is given	**x**	Source Category	**2**	Whitt, J.; Gordon, S. (2023): This is the economic cost of extreme weather. https://www.weforum.org/agenda/2023/01/extreme-weather-economic-cost-wef23/		0,50
	Indicator is strongly pronounced						
6	Indicator is given	**x**	Source Category	**2**	Ames, G. K.; Dufour, R. (2014): Climate Change and Perennial Fruit and Nut Production: Investing in Resilience in Uncertain Times. https://attra.ncat.org/wp-content/uploads/2022/10/climate_change_fruit_nut_production.pdf	The source refers to adaptation measures. Although this is also associated with opportunities, it can be assumed that increased costs will nevertheless arise. It is also evident that conventional business models may become unprofitable.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector							
A 1.2	Agriculture, Forestry and Fishing - Growing of perennial Crops				**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?	"No"				
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
	"Yes"	**x**		Observed loss of assets/property	0,75	1,00	0,75	2
				Expected impact on revenue	0,00	1,00	0,00	3
				Expected impact on costs	0,75	1,00	0,75	4
				1-3 expected to increase in the future	0,00	1,00	0,00	5
				Lack of adaptability of the business model	0,50	1,00	0,50	6
				Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)		1,00	0,00	7
				Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		+/-	0,00	8
				Chronic Climate Risk Score at Sector-Level:			2,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	3	Ministry of Environment and Natural Resources Protection of Georgia; Ministy of Agriculture Georgia (2017): Gaps and Needs analysis and a Roadmap for Preparing the National Adaptation Plan of Agriculture in Georgia.	The source points out that due to climate change, pests and new diseases are intensified. Infected plants equal a loss of assets.	0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category	3	Ministry of Environment and Natural Resources Protection of Georgia; Ministy of Agriculture Georgia (2017): Gaps and Needs analysis and a Roadmap for Preparing the National Adaptation Plan of Agriculture in Georgia.	Indicator is NOT given: The source refers to possible problems due to heat, however, the increase in temperature has a positive effect on citrus plants, fruit and vines.	0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	3	Ministry of Environment and Natural Resources Protection of Georgia; Ministy of Agriculture Georgia (2017): Gaps and Needs analysis and a Roadmap for Preparing the National Adaptation Plan of Agriculture in Georgia.		0,75
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	3	World Bank Group; Asian Development Bank (2021): Climate Risk Country Profile. https://climateknowledgeportal.worldbank.org/sites/default/files/2021-06/15836-WB_Georgia%20Country%20Profile-WEB.pdf	Indicator is NOT given: As the source points out, future developments are uncertain, especially with regard to preci-pitation. I is certain that the temperature will rise, which may have positive effects especially on fruits.	0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Ames, G. K.; Dufour, R. (2014): Climate Change and Perennial Fruit and Nut Production: Investing in Resilience in Uncertain Times. https://attra.ncat.org/wp-content/uploads/2022/10/climate_change_fruit_nut_production.pdf	The source refers to adaptation measures. Although this is also associated with opportunities, it can be assumed that increased costs will nevertheless arise. It is also evident that conventional business models may become unprofitable.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
A 1.2	Agriculture, Forestry and Fishing - Growing of perennial Crops				**Scoring**		**Reference**
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%				**X**	4,00	
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%						
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"	**X**	Add-on Factor 1		1,00	
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					**4,0**	Max. 4

∑

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		4,00
2	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia		1,00
3			0,00

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE Sector

A 1.2	Agriculture, Forestry and Fishing - Growing of perennial Crops					**Scoring**			**Reference**
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					**Score**	**Weight**	**Total**	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		1,00	0,00	1
					"Yes, it is established"		1,00		
					"Yes, it is established and a further extention is planned"		1,00		
	"Yes"	X			Announced in the country under consideration	0,75	1,00	0,75	2
					Established in the country under consideration	0,00	2,00	0,00	3
					Further extension of this very regulation announced	0,00	0,50	0,00	4
					Announced in other relevant countries	0,50	0,50	0,25	5
					Established in other relevant countries	0,75	1,00	0,75	6
					Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses	0,25	1,00	0,25	7
					Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:							2,0	Max. 4
								Σ	

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123 Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category	1	Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law	Indicator is NOT given: To date there is no law regulating important issues related to climate change. As can be seen from the quoted source, this is currently being prepared.	0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	European Commission (2022): Green Deal: EU agrees law to fight global deforestation and forest degradation driven by EU production and consumption. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7444	Although the reference refers to deforestation, agriculture is concerned via land use change. This is likely to lead to future restrictions.	0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Senate of the United States (2021): FOREST Act of 2021. https://www.congress.gov/117/bills/s2950/BILLS-117s2950is.xml	Although the reference refers to deforestation, agriculture is concerned via land use change. This is likely to lead to future restrictions.	0,75
	Indicator is strongly pronounced						
7	Indicator is given	x	Source Category	1	Martus, E.; Petersson, M. (2020): Can Georgia develop a strong policy on climate change?. https://www.opendemocracy.net/en/odr/can-georgia-develop-strong-policy-climate-change/		0,25
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 1.2	Agriculture, Forestry and Fishing - Growing of perennial Crops					**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
			Strong effect on the business model			0,00	1,00	0,00	3
			1-2 expected to increase in the future			0,25	0,50	0,13	4
			1 or 2 obvious in other relevant countries			0,50	1,00	0,50	5
			Impact on the value chain			0,00	0,50	0,00	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							2,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	1	Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law	As the Climate Law is currently being implemented, a stronger effect can be assumed in the future.	0,25
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Zhunusova, E.; Ahimbisibwe, V.; Sadeghi, A.; Toledo-Aceves, T.; Kabwe, G.; Günter, S. (2022): Potential impacts of the proposed EU regulation on deforestation-free supply chains on smallholders, indigenous peoples, and local communities in producer countries outside the EU. Forest Policy and Economics. 143. https://doi.org/10.1016/j.forpol.2022.102817		0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 1.2	Agriculture, Forestry and Fishing - Growing of perennial Crops					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	X	Use in the country under consideration			0,50	1,00	0,50	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,50	1,50	0,75	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							1,5	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	2	Nadiradze, K. (2016): Organic Farming as great challenge for Georgian farmers. Proceedings of the 17th International Conference on Organic Fruit-Growing. Hohenheim, Germany. pp. 15-17. https://www.ecofruit.net/wp-content/uploads/2020/04/65_Nadiradze_295bis297.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Sahota, A. (2023): The Global Market for Organic Food & Drink, at: The World of Organic Agriculture. Statistics and Emerging Trends 2023. Research Institute of Organic Agriculture FiBL, Frick, and IFOAM – Organics International. Edited by Willer, H.; Schlatter, B.; Trávníček, J.. Bonn. https://www.fibl.org/fileadmin/documents/shop/1254-organic-world-2023.pdf		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	FAO – Food and Agriculture Organization of the United Nations (without date): Organic Agriculture and Climate Change. https://www.fao.org/organicag/oa-specialfeatures/oa-climatechange/en/		0,50
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 1.2	Agriculture, Forestry and Fishing - Growing of perennial Crops					**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"				
					"Yes, the use can be recognised in its beginnings"		**1,00**	0,00	1
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,00	2,00	0,00	2
			Perceived benefits in health from the user's perspective			0,50	1,00	0,50	3
			Perceived benefits in quality/durability from the user's perspective			0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems			0,75	0,50	0,38	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Customer Behavior Risk Score at Sector-Level:							1,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category	2	Brown, C.; Sperow, M. (2005): Examining the cost of an all-organic diet. Journal of Food Distribution Research. Vol. 36. No. 856-2016-57427. pp. 20-26.	Indicator is NOT given: Organic food has comparatively higher costs.	0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Lairon, D. (2010): Nutritional quality and safety of organic food. A review. Agronomy for sustainable development. Vol. 30. pp. 33–41. https://doi.org/10.1051/agro/2009019		0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	2	FAO – Food and Agriculture Organization of the United Nations (without date): What are the environmental benefits of organic agriculture?. https://www.fao.org/organicag/oa-faq/oa-faq6/en/		0,75
	Indicator is strongly pronounced	x					
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category	1	Potters, J. (2018): Meghan Markle, Taylor Swift, and Other Celebrities You Never Knew Promoted Fast Food. https://www.marieclaire.com/celebrity/g22746554/celebrities-fast-food-advertisements/ People For The Ethical Treatment Of Animals (2017): Kylie Jenner Is Trying Vegan—and We're All About It. https://www.peta.org/blog/kylie-jenner-vegan/	Indicator is NOT given: Although some VIP's promote alternative lifestyles such as veganism, more advertise unsustainable ones such as fast food.	0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

A 1.4 Animal Production

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector			Scoring			Reference
A 01.4	**Agriculture, Forestry and Fishing - Animal Production**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		3,0		3,3	1
		Chronic		3,5			2
	Transition Climate Risk	GHG-Emission Contribution		4,0		2,50	3
		Transitional Intensity	Probability of regulatory Change	1,5	1,0		4
			Economic Impact of regulatory Change	0,0			5
			Technological Change	1,5			6
			Customer Behavior	1,0			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0,8	2,3	8
		Other Environmental Risks		Add-on Factor	0,5		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
					ESG-Risk Score at Sector-Level:	8	8,00

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Williams, D.; Clark, M. (2021): Almost 90% of the world's animal species will lose some habitat to agriculture by 2050. https://www.weforum.org/agenda/2021/01/worlds-animal-species-habitat-loss-agriculture-2050/	0,75
9	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia	0,5
10	Business for Social Responsibility (2023): 10 Human Rights Priorities for the Food, Beverage, and Agriculture Sector. https://www.bsr.org/en/primers/10-human-rights-priorities-for-food-beverage-and-agriculture-sector	0,5
11	The Green Stars Project (2020): The social impact of the meat industry. https://greenstarsproject.org/2020/05/04/social-impact-meat-industry-slaughterhouse-conditions-ptsd/	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

A 01.4	Agriculture, Forestry and Fishing - Animal Production				**Scoring**			**Reference**
	Are acute climate events in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
"No"		Is it likely that this relevance will be given in the future?		"No"				
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
"Yes"	**X**	Observed loss of assets/property			0,50	1,00	0,50	2
		Expected impact on revenue			0,50	1,00	0,50	3
		Expected impact on costs			0,50	1,00	0,50	4
		1-3 expected to increase in the future			0,50	1,00	0,50	5
		Lack of adaptability of the business model			0,50	1,00	0,50	6
		Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			0,50	1,00	0,50	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
						Acute Climate Risk Score at Sector-Level:	**3,0**	Max. 4

Σ

Reference							**Score**
1	No		Source Category				**0,00**
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	**2**	Godde, C. M.; Mason-D'Croz, D.; Mayberry, D. E.; Thornton, P. K.; Herrero, M. (2021): Impacts of climate change on the livestock food supply chain; a review of the evidence. Global food security. 28. 100488. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7938222/	In the past, extreme weather events have been observed to lead to the death of livestock.	0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	**2**	Shatberashvili, N.; Artsivadze, K.; Rucevska, I. et al. (2016): Outlook on climate change adaptation in the South Caucasus mountains. SERIES, MOUNTAIN ADAPTATION OUTLOOK. https://www.researchgate.net/profile/Kakha-Artsivadze/publication/301547624_Outlook_on_Climate_Change_Adaptation_in_the_South_Caucasus_Mountains/links/57188dd908aed8a339e5bd8a/Outlook-on-Climate-Change-Adaptation-in-the-South-Caucasus-Mountains.pdf	The source addresses both acute and chronic climate events that reduce livestock yields, for example.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	**2**	Godde, C. M.; Mason-D'Croz, D.; Mayberry, D. E.; Thornton, P. K.; Herrero, M. (2021): Impacts of climate change on the livestock food supply chain; a review of the evidence. Global food security. 28. 100488. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7938222/		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	**2**	Whitt, J.; Gordon, S. (2023): This is the economic cost of extreme weather. https://www.weforum.org/agenda/2023/01/extreme-weather-economic-cost-wef23/		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	**2**	Godde, C. M.; Mason-D'Croz, D.; Mayberry, D. E.; Thornton, P. K.; Herrero, M. (2021): Impacts of climate change on the livestock food supply chain; a review of the evidence. Global food security. 28. 100488. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7938222/	The source points out that there is still a high degree of uncertainty with regard to climatic changes. Accordingly, adaptation decisions must take into account a broad spectrum of scanarios, not all of which are feasible.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks	*See A1.1 Agriculture, Forestry and Fishing - growing of non-perennial crops*				Animal production is highly dependent on the other agricultural sectors with regard to fodder. As the risk score of A1.1 is 3.0, this results in a surcharge of 0.5.	0,50
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector				Scoring			**Reference**
A 01.4	Agriculture, Forestry and Fishing - Animal Production							
	Are chronic climate developments in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?	"No"				
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property		0,75	1,00	0,75	2
			Expected impact on revenue		0,50	1,00	0,50	3
			Expected impact on costs		0,75	1,00	0,75	4
			1-3 expected to increase in the future		0,50	1,00	0,50	5
			Lack of adaptability of the business model		0,75	1,00	0,75	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)		0,50	1,00	0,50	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		-0,50	+/-	-0,50	8
	Chronic Climate Risk Score at Sector-Level:						**3,5**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	3	Ministry of Environment and Natural Resources Protection of Georgia; Ministy of Agriculture Georgia (2017): Gaps and Needs analysis and a Roadmap for Preparing the National Adaptation Plan of Agriculture in Georgia.	The source points out that due to climate change, the spread of diseases and hence disease-related losses is increasing.	0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Shatberashvili, N.; Artsivadze, K.; Rucevska, I. et al. (2016): Outlook on climate change adaptation in the South Caucasus mountains. SERIES, MOUNTAIN ADAPTATION OUTLOOK. https://www.researchgate.net/profile/Kakha-Artsivadze/publication/301547624_Outlook_on_Climate_Change_Adaptation_in_the_South_Caucasus_Mountains/links/57188dd908aed8a339e5bd8a/Outlook-on-Climate-Change-Adaptation-in-the-South-Caucasus-Mountains.pdf	The source addresses both acute and chronic climate events that reduce livestock-related yields.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	3	Ministry of Environment and Natural Resources Protection of Georgia; Ministy of Agriculture Georgia (2017): Gaps and Needs analysis and a Roadmap for Preparing the National Adaptation Plan of Agriculture in Georgia.	Reference is made to the fact that due to decreasing rainfall, access to water is becoming more problematic.	0,75
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Godde, C. M.; Mason-D'Croz, D.; Mayberry, D. E.; Thornton, P. K.; Herrero, M. (2021): Impacts of climate change on the livestock food supply chain; a review of the evidence. Global food security. 28. 100488. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7938222/		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Ministry of Environment and Natural Resources Protection of Georgia; Ministy of Agriculture Georgia (2017): Gaps and Needs analysis and a Roadmap for Preparing the National Adaptation Plan of Agriculture in Georgia.	The decrease in precipitation mentioned in the source can be mitigated by improved management, but this is only possible to a limited extent.	0,75
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks	*See A1.1 Agriculture, Forestry and Fishing - growing of non-perennial crops*				Animal production is highly dependent on the other agricultural sectors with regard to fodder. As the risk score of A1.1 is 3.0, this results in a surcharge of 0.5.	0,50
8	Score is reduced		Explanation/ Commentary				-0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector				Scoring		**Reference**
A 01.4	Agriculture, Forestry and Fishing - Animal Production						
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%				X	4,00	
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%						
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"	X	Add-on Factor 1		1,00	
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					4,0	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		4,00
2	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia		1,00
3			0,00

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					Scoring			**Reference**
A 01.4	Agriculture, Forestry and Fishing - Animal Production								
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					**Score**	**Weight**	**Total**	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		**1,00**	0,00	1
					"Yes, it is established"		**1,00**		
					"Yes, it is established and a further extention is planned"		**1,00**		
	"Yes"	**X**	Announced in the country under consideration			0,00	1,00	0,00	2
			Established in the country under consideration			0,00	2,00	0,00	3
			Further extension of this very regulation announced			0,00	0,50	0,00	4
			Announced in other relevant countries			0,50	0,50	0,25	5
			Established in other relevant countries			0,75	1,00	0,75	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,25	1,00	0,25	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:							1,5	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given		Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	As the increase in livestock productivity is stated as a major objective. Thus, it can be stated that although there is a regulatory reference, it is unlikely to result in any major constraints. Hence the indicator is NOT given.	0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category	1	Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law	Indicator is NOT given: To date there is no law that regulates important issues related to climate change. Refering to the source, this is currently being prepared.	0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	European Commission (2022): Green Deal: EU agrees law to fight global deforestation and forest degradation driven by EU production and consumption. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7444 Greenpeace Interational (2019): Deforestation, meat production driving climate crisis. https://www.greenpeace.org/international/press-release/23685/deforestation-meat-production-driving-climate-crisis/	The law addressed in the first source refers to deforestation. Animal production is known to be one of the biggest drivers of deforestation (see source 2).	0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Senate of the United States (2021): FOREST Act of 2021. https://www.congress.gov/117/bills/s2950/BILLS-117s2950is.xml Greenpeace Interational (2019): Deforestation, meat production driving climate crisis. https://www.greenpeace.org/international/press-release/23685/deforestation-meat-production-driving-climate-crisis/	The law addressed in the first source refers to deforestation. Animal production is known to be one of the biggest drivers of deforestation (see source 2).	0,75
	Indicator is strongly pronounced						
7	Indicator is given	x	Source Category	1	Martus, E.; Petersson, M. (2020): Can Georgia develop a strong policy on climate change?. https://www.opendemocracy.net/en/odr/can-georgia-develop-strong-policy-climate-change/		0,25
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					Scoring			**Reference**
A 01.4	Agriculture, Forestry and Fishing - Animal Production								
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"	**X**	Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?	**X**	"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"		Effect on the business model				2,00	0,00	2
			Strong effect on the business model				1,00	0,00	3
			1-2 expected to increase in the future				0,50	0,00	4
			1 or 2 obvious in other relevant countries				1,00	0,00	5
			Impact on the value chain				0,50	0,00	6
			Lack of adaptability of the business model				1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							0,0	Max. 4
								Σ	

Reference							Score
1	No		Source Category				**0,00**
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 01.4	Agriculture, Forestry and Fishing - Animal Production					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,50	1,00	0,50	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,50	1,50	0,75	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							1,5	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	2	Nadiradze, K. (2016): Organic Farming as great challenge for Georgian farmers. Proceedings of the 17th International Conference on Organic Fruit-Growing. Hohenheim, Germany. pp. 15-17. https://www.ecofruit.net/wp-content/uploads/2020/04/65_Nadiradze_295bis297.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Sahota, A. (2023): The Global Market for Organic Food & Drink, at: The World of Organic Agriculture. Statistics and Emerging Trends 2023. Research Institute of Organic Agriculture FiBL, Frick, and IFOAM – Organics International. Edited by Willer, H.; Schlatter, B.; Trávníček, J.. Bonn. https://www.fibl.org/fileadmin/documents/shop/1254-organic-world-2023.pdf		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	FAO – Food and Agriculture Organization of the United Nations (without date): Organic Agriculture and Climate Change. https://www.fao.org/organicag/oa-specialfeatures/oa-climatechange/en/		0,50
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 01.4	Agriculture, Forestry and Fishing - Animal Production					**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"				
					"Yes, the use can be recognised in its beginnings"		**1,00**	0,00	1
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,00	2,00	0,00	2
			Perceived benefits in health from the user's perspective			0,50	1,00	0,50	3
			Perceived benefits in quality/durability from the user's perspective			0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems			0,75	0,50	0,38	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Customer Behavior Risk Score at Sector-Level:							**1,0**	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category	2	Brown, C.; Sperow, M. (2005): Examining the cost of an all-organic diet. Journal of Food Distribution Research. Vol. 36. No. 856-2016-57427. pp. 20-26.	Indicator is NOT given: Organic food has comparatively higher costs.	0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Lairon, D. (2010): Nutritional quality and safety of organic food. A review. Agronomy for sustainable development. Vol. 30. pp. 33–41. https://doi.org/10.1051/agro/2009019		0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	2	Pieper, M.; Michalke, A.; Gaugler, T. (2020): Calculation of external climate costs for food highlights inadequate pricing of animal products. Nature Communications. 11, 6117. https://doi.org/10.1038/s41467-020-19474-6	Plant-based products have a much lower environmental impact than animal-based products.	0,75
	Indicator is strongly pronounced	x					
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category	1	Potters, J. (2018): Meghan Markle, Taylor Swift, and Other Celebrities You Never Knew Promoted Fast Food. https://www.marieclaire.com/celebrity/g22746554/celebrities-fast-food-advertisements/ People For The Ethical Treatment Of Animals (2017): Kylie Jenner Is Trying Vegan—and We're All About It. https://www.peta.org/blog/kylie-jenner-vegan/	Indicator is NOT given: Although some celebrities promote alternative lifestyles such as veganism, more advertise unsustainable products such as fast food.	0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

A 2 Forestry and Logging

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector						
A 2	**Agriculture, Forestry and Fishing - Forestry and Logging**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		3,0		3,5	1
		Chronic		4,0			2
	Transition Climate Risk	GHG-Emission Contribution		4,0		2,88	3
		Transitional Intensity	Probability of regulatory Change	2,5	1,8		4
			Economic Impact of regulatory Change	2,5			5
			Technological Change	1,5			6
			Customer Behavior	0,5			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	1,00	2,8	8
		Other Environmental Risks		Add-on Factor	0,75		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
					ESG-Risk Score at Sector-Level:	9	9,13

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Rukhadze, A. (2015): Georgia's Fifth National Report to the Convention on Biological Diversity. https://dev-chm.cbd.int/doc/world/ge/ge-nr-05-en.pdf	1,00
9	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia	0,75
10	United Nations Environment Programme Finance Initiative (2014): FORESTRY AND LOGGING. https://www.unepfi.org/humanrightstoolkit/forestry.php	0,5
11	Shatberashvili, N.; Artsivadze, K.; Rucevska, I. et al. (2016): Outlook on climate change adaptation in the South Caucasus mountains. SERIES, MOUNTAIN ADAPTATION OUTLOOK. https://www.researchgate.net/profile/Kakha-Artsivadze/publication/301547624_Outlook_on_Climate_Change_Adaptation_in_the_South_Caucasus_Mountains/links/57188dd908aed8a339e5bd8a/Outlook-on-Climate-Change-Adaptation-in-the-South-Caucasus-Mountains.pdf	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

A 2	Agriculture, Forestry and Fishing - Forestry and Logging					**Scoring**			**Reference**
	Are acute climate events in the country/region already relevant for the sector under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		**1,00**	0,00	1
					"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property			0,75	1,00	0,75	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,75	1,00	0,75	4
			1-3 expected to increase in the future			0,50	1,00	0,50	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Acute Climate Risk Score at Sector-Level:							3,0	Max. 4
								Σ	

Reference							Score
1	No		Source Category				**0,00**
	Yes						
	Yes, very likely						
2	Indicator is given		Source Category	**2**	Lecina-Diaz, J. et al. (2021): Characterizing forest vulnerability and risk to climate-change hazards. Frontiers in Ecology and the Environment. Vol. 19. Issue 2. https://doi.org/10.1002/fee.2278		0,75
	Indicator is strongly pronounced	**x**					
3	Indicator is given	**x**	Source Category	**2**	Subramanian, N.; Nilsson, U.; Mossberg, M.; Bergh, J. (2019): Impacts of climate change, weather extremes and alternative strategies in managed forests. Ecoscience. Vol. 26. Issue 1. https://doi.org/10.1080/11956860.2018.1515597	The source refers to the example of a storm that reduced the value of felled trees by 50%.	0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category	**2**	Subramanian, N.; Nilsson, U.; Mossberg, M.; Bergh, J. (2019): Impacts of climate change, weather extremes and alternative strategies in managed forests. Ecoscience. Vol. 26. Issue 1. https://doi.org/10.1080/11956860.2018.1515597	The source refers to the example of a storm that increased harvesting operations by 100%.	0,75
	Indicator is strongly pronounced	**x**					
5	Indicator is given	**x**	Source Category	**2**	Forzieri, Giovanni, et al. (2021): Emergent vulnerability to climate-driven disturbances in European forests. Nature communications. Vol. 12. https://doi.org/10.1038/s41467-021-21399-7		0,50
	Indicator is strongly pronounced						
6	Indicator is given	**x**	Source Category	**2**	Subramanian, N.; Nilsson, U.; Mossberg, M.; Bergh, J. (2019): Impacts of climate change, weather extremes and alternative strategies in managed forests. Ecoscience. Vol. 26. Issue 1. https://doi.org/10.1080/11956860.2018.1515597		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector							
A 2	Agriculture, Forestry and Fishing - Forestry and Logging				**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?	"No"				
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property		0,75	1,00	0,75	2
			Expected impact on revenue		0,75	1,00	0,75	3
			Expected impact on costs		0,50	1,00	0,50	4
			1-3 expected to increase in the future		0,75	1,00	0,75	5
			Lack of adaptability of the business model		0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)		0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		0,50	+/-	0,50	8
	Chronic Climate Risk Score at Sector-Level:						4,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given		Source Category	2	Lecina-Diaz, J. et al. (2021): Characterizing forest vulnerability and risk to climate-change hazards. Frontiers in Ecology and the Environment. Vol. 19. Issue 2. https://doi.org/10.1002/fee.2278		0,75
	Indicator is strongly pronounced	x					
3	Indicator is given	x	Source Category	3	Hanewinkel, M. et al. (2013): Climate change may cause severe loss in the economic value of European forest land. Nature Climate Change. Vol. 3. https://doi.org/10.1038/nclimate1687		0,75
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Funk, J. M., et al. (2019): Securing the climate benefits of stable forests. Climate Policy 19.7. pp. 845-860. https://doi.org/10.1080/14693062.2019.1598838		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	3	Hanewinkel, M. et al. (2013): Climate change may cause severe loss in the economic value of European forest land. Nature Climate Change. Vol. 3. https://doi.org/10.1038/nclimate1687		0,75
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Brunette, M., Hanewinkel, M. & Yousefpour, R. (2020): Risk aversion hinders forestry professionals to adapt to climate change. Climatic Change. Vol. 162. https://doi.org/10.1007/s10584-020-02751-0	The source addresses the need for change of the conventional business cases.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

A 2	Agriculture, Forestry and Fishing - Forestry and Logging			**Scoring**		**Reference**
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country			**Percentage-Range**	**Total**	
	X ≥ 10%			**X**	4,00	
	10% > X ≥ 7.5%					
	7.5% > X ≥ 5%					
	5% > X ≥ 1%					
	1% > X ≥ 0.5%					
	0.5% > X ≥ 0.25%					
Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
	"Yes"		Add-on Factor 0.5			
	"Yes, severely"	**X**	Add-on Factor 1		1,00	
Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
	"Yes, score 3 emissions"		Add-on Factor 0.25			
	"Yes, score 4 emissions"		Add-on Factor 0.5			
				GHG-Emission Contribution Score at Sector-Level:	**4,0**	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		4,00
2	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia		1,00
3			0,00

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 2	Agriculture, Forestry and Fishing - Forestry and Logging					**Scoring**			**Reference**
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					**Score**	**Weight**	**Total**	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		**1,00**	0,00	1
					"Yes, it is established"		**1,00**		
					"Yes, it is established and a further extention is planned"		**1,00**		
	"Yes"	**X**	Announced in the country under consideration			0,75	1,00	0,75	2
			Established in the country under consideration			0,00	2,00	0,00	3
			Further extension of this very regulation announced			0,00	0,50	0,00	4
			Announced in other relevant countries			0,50	0,50	0,25	5
			Established in other relevant countries			0,75	1,00	0,75	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,50	1,00	0,50	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:							2,5	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123 Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category	1	Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law	Indicator is NOT given: To date there is no law that regulates important issues related to climate change. As can be seen from the source, this is currently being prepared.	0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	European Commission (2022): Green Deal: EU agrees law to fight global deforestation and forest degradation driven by EU production and consumption. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7444		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Senate of the United States (2021): FOREST Act of 2021. https://www.congress.gov/117/bills/s2950/BILLS-117s2950is.xml		0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category	1	Martus, E.; Petersson, M. (2020): Can Georgia develop a strong policy on climate change?. https://www.opendemocracy.net/en/odr/can-georgia-develop-strong-policy-climate-change/		0,50
	Indicator is strongly pronounced	x					
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector							
A 2	Agriculture, Forestry and Fishing - Forestry and Logging				**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?				**Score**	**Weight**	**Total**	
"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
				"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
				"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
				"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
		Strong effect on the business model			0,00	1,00	0,00	3
		1-2 expected to increase in the future			0,25	0,50	0,13	4
		1 or 2 obvious in other relevant countries			0,50	1,00	0,50	5
		Impact on the value chain			0,50	0,50	0,25	6
		Lack of adaptability of the business model			0,00	1,00	0,00	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:						2,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123 Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	1	Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law	As the Climate Law is currently being implemented, a stronger effect can be assumed in the future.	0,25
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	European Commission (2023): Green Deal: New law to fight global deforestation and forest degradation driven by EU production and consumption enters into force. https://environment.ec.europa.eu/news/green-deal-new-law-fight-global-deforestation-and-forest-degradation-driven-eu-production-and-2023-06-29_en		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	European Commission (2023): Green Deal: New law to fight global deforestation and forest degradation driven by EU production and consumption enters into force. https://environment.ec.europa.eu/news/green-deal-new-law-fight-global-deforestation-and-forest-degradation-driven-eu-production-and-2023-06-29_en	Since, for instance, furniture is also mentioned as affected products, the EU law is linked to consequences in the supply chain.	0,50
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector				Scoring			Reference
A 2	Agriculture, Forestry and Fishing - Forestry and Logging							
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?				**Score**	**Weight**	**Total**	
"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
				"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
				"Yes, it is available and used in other relevant countries"		**1,00**		
				"Yes, it is heavily used in other relevant countries"		**1,00**		
"Yes"	**X**	Use in the country under consideration			0,50	1,00	0,50	2
		Heavy use in the country under consideration			0,00	1,00	0,00	3
		Use in other relevant countries			0,25	0,50	0,13	4
		Heavy use in other relevant countries			0,00	1,00	0,00	5
		Accepted economic benefit of technology (lower costs and/or higher yields)			0,50	1,50	0,75	6
		Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
		Technological Change Risk Score at Sector-Level:					1,5	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	**x**	Source Category	**2**	United Nations Economic Commission for Europe (2017): Georgia gets one step closer towards sustainable forest management. https://unece.org/forestry/press/georgia-gets-one-step-closer-towards-sustainable-forest-management		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**1**	FSC (2021): FSC's Response the EU Public Consultation on the Sustainable Products Initiative. https://fsc.org/sites/default/files/2021-09/FSC's%20Response%20the%20EU%20Public%20Consultation%20on%20the%20Sustainable%20Products%20Initiative.pdf		0,25
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category	**1**	Atkins, D. (2023): Understanding the Economic and Environmental Benefits of Sustainable Forestry. https://www.landandladies.com/blog/understanding-the-economic-and-environmental-benefits-of-sustainable-forestry		0,50
	Indicator is strongly pronounced	**x**					
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 2	Agriculture, Forestry and Fishing - Forestry and Logging					**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"				
					"Yes, the use can be recognised in its beginnings"		**1,00**	0,00	1
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,00	2,00	0,00	2
			Perceived benefits in health from the user's perspective			0,00	1,00	0,00	3
			Perceived benefits in quality/durability from the user's perspective			0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems			0,75	0,50	0,38	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Customer Behavior Risk Score at Sector-Level:							0,5	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	**2**	Imai, N. et al. (2009): Co-benefits of sustainable forest management in biodiversity conservation and carbon sequestration. https://doi.org/10.1371/journal.pone.0008267		0,75
	Indicator is strongly pronounced	**x**					
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

A 3 Fishing and Aquaculture

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
A 3	**Agriculture, Forestry and Fishing - Fishing and Aquaculture**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		2,5		2,5	1
		Chronic		2,5			2
	Transition Climate Risk	GHG-Emission Contribution		4,0		2,69	3
		Transitional Intensity	Probability of regulatory Change	2,5	1,4		4
			Economic Impact of regulatory Change	1,5			5
			Technological Change	1,0			6
			Customer Behavior	0,5			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0,75	2,3	8
		Other Environmental Risks		Add-on Factor	0,5		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
				ESG-Risk Score at Sector-Level:		7	7,44

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Rukhadze, A. (2015): Georgia's Fifth National Report to the Convention on Biological Diversity. https://dev-chm.cbd.int/doc/world/ge/ge-nr-05-en.pdf	0,8
9	Hill, J. (without date): Environmental Consequences of Fishing Practices. https://www.environmentalscience.org/environmental-consequences-fishing-practices	0,5
10	Food and Agriculture Organization of the United Nations (2016): The violation of human rights within the fishing sector and illegal, unreported and unregulated (IUU) fishing. https://www.fao.org/about/meetings/world-fisheries-day-event/en/	0,5
11	Ramsay, E. (2018): Expanding social responsibility in fisheries. https://earth.stanford.edu/news/expanding-social-responsibility-fisheries	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

A 3	Agriculture, Forestry and Fishing - Fishing and Aquaculture				Scoring			**Reference**
	Are acute climate events in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
"No"		Is it likely that this relevance will be given in the future?		"No"			0,00	1
				"Yes"		**1,00**		
				"Yes, very likely"		**1,00**		
"Yes"	**X**	Observed loss of assets/property			0,50	1,00	0,50	2
		Expected impact on revenue			0,50	1,00	0,50	3
		Expected impact on costs			0,50	1,00	0,50	4
		1-3 expected to increase in the future			0,50	1,00	0,50	5
		Lack of adaptability of the business model			0,50	1,00	0,50	6
		Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)				1,00	0,00	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Acute Climate Risk Score at Sector-Level:						2,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Mohanty, B.; Mohanty, S.; Sahoo, J.; Sharma, A. (2010): Climate change: impacts on fisheries and aquaculture. Climate change and variability. pp. 119-138. https://books.google.de/books?hl=de&lr=&id=L9mgDwAAQBAJ&oi=fnd&pg=PA119&dq=Climate+change+impacts+on+fisheries&ots=hbi5hXdALQ&sig=uGySpTqklHsh4cBa7P3scF_u1b0#v=onepage&q=Climate%20change%20impacts%20on%20fisheries&f=false		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Golam, K.; Haroon Yousuf, A. K.; Dayanthi, N. (2017): Climate change impacts on tropical and temperate fisheries, aquaculture, and seafood security and implications-A review. Livestock Research for Rural Development. 29. pp. 1-29. https://www.researchgate.net/profile/Yousuf-Haroon/publication/312029756_Climate_change_impacts_on_tropical_and_temperate_fisheries_aquaculture_and_seafood_security_and_implications_-_A_review/links/6385496c48124c2bc67f1449/Climate-change-impacts-on-tropical-and-temperate-fisheries-aquaculture-and-	Storms can destroy fish habitat.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Golam, K.; Haroon Yousuf, A. K.; Dayanthi, N. (2017): Climate change impacts on tropical and temperate fisheries, aquaculture, and seafood security and implications-A review. Livestock Research for Rural Development. 29. pp. 1-29. https://www.researchgate.net/profile/Yousuf-Haroon/publication/312029756_Climate_change_impacts_on_tropical_and_temperate_fisheries_aquaculture_and_seafood_security_and_implications_-_A_review/links/6385496c48124c2bc67f1449/Climate-change-impacts-on-tropical-and-temperate-fisheries-aquaculture-and-	The source refers to the fact that storms can increase insurance costs.	0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Golam, K.; Haroon Yousuf, A. K.; Dayanthi, N. (2017): Climate change impacts on tropical and temperate fisheries, aquaculture, and seafood security and implications-A review. Livestock Research for Rural Development. 29. pp. 1-29. https://www.researchgate.net/profile/Yousuf-Haroon/publication/312029756_Climate_change_impacts_on_tropical_and_temperate_fisheries_aquaculture_and_seafood_security_and_implications_-_A_review/links/6385496c48124c2bc67f1449/Climate-change-impacts-on-tropical-and-temperate-fisheries-aquaculture-and-	The source suggests adaptation options, but it can be assumed that these will lead to additional costs.	0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Mohanty, B.; Mohanty, S.; Sahoo, J.; Sharma, A. (2010): Climate change: impacts on fisheries and aquaculture. Climate change and variability. pp. 119-138. https://books.google.de/books?hl=de&lr=&id=L9mgDwAAQBAJ&oi=fnd&pg=PA119&dq=Climate+change+impacts+on+fisheries&ots=hbi5hXdALQ&sig=uGySpTqklHsh4cBa7P3scF_u1b0#v=onepage&q=Climate%20change%20impacts%20on%20fisheries&f=false		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector							
A 3	Agriculture, Forestry and Fishing - Fishing and Aquaculture				**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
"No"		Is it likely that this relevance will be given in the future?		"No"				
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
"Yes"	X	Observed loss of assets/property			0,50	1,00	0,50	2
		Expected impact on revenue			0,50	1,00	0,50	3
		Expected impact on costs			0,50	1,00	0,50	4
		1-3 expected to increase in the future			0,50	1,00	0,50	5
		Lack of adaptability of the business model			0,50	1,00	0,50	6
		Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)				1,00	0,00	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Chronic Climate Risk Score at Sector-Level:						2,5	Max. 4
							Σ	

Reference							**Score**
1	No		Source Category				**0,00**
	Yes						
	Yes, very likely						
2	Indicator is given	**x**	Source Category	**2**	Kangur, K.; Kangur, P.; Ginter, K.; Orru, K.; Haldna, M.; Möls, T.; Kangur, A. (2013): Long-term effects of extreme weather events and eutrophication on the fish community of shallow Lake Peipsi (Estonia/Russia). Journal of Limnology. Vol. 72. Issue 2. https://www.researchgate.net/profile/Kuelli-Kangur/publication/237148569_Long-term_effects_of_extreme_weather_events_and_eutrophication_on_the_fish_community_of_Lake_Peipsi_EstoniaRussia/links/0deec51b96e47b3240000000/Long-term-effects-of-extreme-weather-events-and-eutrophication-on-the-fish-community-of-Lake-Peipsi-Estonia-Russia.pdf Mohanty, B.; Mohanty, S.; Sahoo, J.; Sharma, A. (2010): Climate change: impacts on fisheries and aquaculture. Climate change and variability. pp. 119-138. https://books.google.de/books?hl=de&lr=&id=L9mgDwAAQBAJ&oi=fnd&pg=PA119&dq=Climate+change+impacts+on+fisheries&ots=hbi5hXdALQ&sig=uGySpTqklHsh4cBa7P3scF_u1b0#v=onepage&q=Climate%20change%20impacts%20on%20fisheries&f=false	With regard to fishing in lakes, see e.g. Source 1. Regarding fishing in seas, see source 2.	0,50
	Indicator is strongly pronounced						
3	Indicator is given	**x**	Source Category	**2**	Mohanty, B.; Mohanty, S.; Sahoo, J.; Sharma, A. (2010): Climate change: impacts on fisheries and aquaculture. Climate change and variability. pp. 119-138. https://books.google.de/books?hl=de&lr=&id=L9mgDwAAQBAJ&oi=fnd&pg=PA119&dq=Climate+change+impacts+on+fisheries&ots=hbi5hXdALQ&sig=uGySpTqklHsh4cBa7P3scF_u1b0#v=onepage&q=Climate%20change%20impacts%20on%20fisheries&f=false	The source indicates that rising temperatures could lead to lower growth of aquatic animals.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**2**	Mohanty, B.; Mohanty, S.; Sahoo, J.; Sharma, A. (2010): Climate change: impacts on fisheries and aquaculture. Climate change and variability. pp. 119-138. https://books.google.de/books?hl=de&lr=&id=L9mgDwAAQBAJ&oi=fnd&pg=PA119&dq=Climate+change+impacts+on+fisheries&ots=hbi5hXdALQ&sig=uGySpTqklHsh4cBa7P3scF_u1b0#v=onepage&q=Climate%20change%20impacts%20on%20fisheries&f=false	The source points out that many fish are more vulnerable to diseases when temperatures rise. This will result in higher costs for fishing companies, as greater effort will be required to comply with standards.	0,50
	Indicator is strongly pronounced						
5	Indicator is given	**x**	Source Category	**2**	Robitzski, D. (2020): 60% of the world's fish species at risk of extinction due to climate change. https://www.weforum.org/agenda/2020/07/climate-change-threatens-60-percent-of-the-world-s-fish-species		0,50
	Indicator is strongly pronounced						
6	Indicator is given	**x**	Source Category	**2**	Mohanty, B.; Mohanty, S.; Sahoo, J.; Sharma, A. (2010): Climate change: impacts on fisheries and aquaculture. Climate change and variability. pp. 119-138. https://books.google.de/books?hl=de&lr=&id=L9mgDwAAQBAJ&oi=fnd&pg=PA119&dq=Climate+change+impacts+on+fisheries&ots=hbi5hXdALQ&sig=uGySpTqklHsh4cBa7P3scF_u1b0#v=onepage&q=Climate%20change%20impacts%20on%20fisheries&f=false		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

B Mining and Quarrying

Risk Radar

GHG Emissions

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector				Scoring		Reference
A 3	Agriculture, Forestry and Fishing - Fishing and Aquaculture						
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%				X	4,00	
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%						
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"	X	Add-on Factor 1		1,00	
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					4,0	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		4,00
2	Muñoz, M.; Reul, A.; Guijarro, B.; Hidalgo, M. (2023): Carbon footprint, economic benefits and sustainable fishing: Lessons for the future from the Western Mediterranean. Science of the Total Environment. 865. 160783. https://doi.org/10.1016/j.scitotenv.2022.160783		1,00
3			0,00

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE Sector

A 3	Agriculture, Forestry and Fishing - Fishing and Aquaculture					**Scoring**			**Reference**
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					**Score**	**Weight**	**Total**	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		**1,00**	0,00	1
					"Yes, it is established"		**1,00**		
					"Yes, it is established and a further extention is planned"		**1,00**		
	"Yes"	**X**	Announced in the country under consideration			0,50	1,00	0,50	2
			Established in the country under consideration			0,75	2,00	1,50	3
			Further extension of this very regulation announced			0,00	0,50	0,00	4
			Announced in other relevant countries			0,50	0,50	0,25	5
			Established in other relevant countries			0,00	1,00	0,00	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:							2,5	Max. 4
								Σ	

Reference							**Score**
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	**2**	United Nations (2023): UN delegates reach historic agreement on protecting marine biodiversity in international waters. https://news.un.org/en/story/2023/03/1134157 Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	In Georgia's climate change strategy, the fisheries sector is mentioned as a sub-sector of agriculture, but no relevant measures can be identified. From this perspective, the indicator would be considered as not given. However, Georgia is a member of the United Nations, making the report cited in source 2 relevant.	0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	**3**	President of Georgia S. Zourabichvili (2020): Law of Georgia on Aquaculture. https://faolex.fao.org/docs/pdf/geo198626.pdf		0,75
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	**2**	United Nations (2023): UN delegates reach historic agreement on protecting marine biodiversity in international waters. https://news.un.org/en/story/2023/03/1134157		0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					Score	Weight	Total	Reference
A 3	Agriculture, Forestry and Fishing - Fishing and Aquaculture					**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
			Strong effect on the business model			0,00	1,00	0,00	3
			1-2 expected to increase in the future			0,00	0,50	0,00	4
			1 or 2 obvious in other relevant countries			0,00	1,00	0,00	5
			Impact on the value chain			0,00	0,50	0,00	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							1,5	Max. 4
								Σ	

Reference							Score
1	No		Source Category				**0,00**
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	**x**	Source Category	**3**	President of Georgia S. Zourabichvili (2020): Law of Georgia on Aquaculture. https://faolex.fao.org/docs/pdf/geo198626.pdf		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 3	Agriculture, Forestry and Fishing - Fishing and Aquaculture					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				1
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,50	1,00	0,50	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,00	1,50	0,00	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							1,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	2	Van Anrooy, R.; Mena Millar, A.; Spreij, M. (2006): Fisheries and aquaculture in Georgia-Current status and planning. https://www.fao.org/3/j7599e/j7599e.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Parkes, G. et al. (2010): Behind the signs—a global review of fish sustainability information schemes. Reviews in Fisheries Science. Vol. 18. Issue 4. pp. 344-356. https://doi.org/10.1080/10641262.2010.516374		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
A 3	Agriculture, Forestry and Fishing - Fishing and Aquaculture					**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"			0,00	1
					"Yes, the use can be recognised in its beginnings"		**1,00**		
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,00	2,00	0,00	2
			Perceived benefits in health from the user's perspective			0,00	1,00	0,00	3
			Perceived benefits in quality/durability from the user's perspective			0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems			0,75	0,50	0,38	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Customer Behavior Risk Score at Sector-Level:							0,5	Max. 4
								Σ	

Reference							Score
1	No		Source Category				**0,00**
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	**2**	Muñoz, M.; Reul, A.; Guijarro, B.; Hidalgo, M. (2023): Carbon footprint, economic benefits and sustainable fishing: Lessons for the future from the Western Mediterranean. Science of the Total Environment. 865. 160783. https://doi.org/10.1016/j.scitotenv.2022.160783		0,75
	Indicator is strongly pronounced	**x**					
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

B Mining and Quarrying

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

B	**Mining and Quarrying**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		2,5		2,5	1
		Chronic		2,5			2
	Transition Climate Risk	GHG-Emission Contribution		2,5		1,69	3
		Transitional Intensity	Probability of regulatory Change	1,5	0,9		4
			Economic Impact of regulatory Change	1,0			5
			Technological Change	0,5			6
			Customer Behavior	0,5			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	1,00	3,5	8
		Other Environmental Risks		Add-on Factor	0,75		9
		Possible Human Rights Issues		Add-on Factor	0,75		10
		Other Social Risks		Add-on Factor	1,0		11
					ESG-Risk Score at Sector-Level:	8	7,69
						Σ	

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES PROTECTION (2015): Georgia's Fifth National Report to the Convention on Biological Diversity. MEPA, Tbilisi. Cagle, A. (2023): There's a Biodiversity Crisis, and Oil and Gas Are Making It Worse. https://earthjustice.org/article/biodiversity-crisis-fossil-fuels	1,00
9	MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES PROTECTION (2015): Georgia's Fifth National Report to the Convention on Biological Diversity. MEPA, Tbilisi.	0,75
10	Heinrich Böll Stiftung (2023): Fair, Accountable and Human Rights-Centered Mining Sector in Georgia. https://ge.boell.org/en/2023/07/24/fair-accountable-and-human-rights-centered-mining-sector-georgia-social-justice-center Radio Free Europe (2023): Georgian Miners' Strike Marked By Grisly Protests Enters 14th Day. https://www.rferl.org/a/georgian-miners-strike-grisly-protests/32465590.html	0,75
11	Heinrich Böll Stiftung (2023): Fair, Accountable and Human Rights-Centered Mining Sector in Georgia. https://ge.boell.org/en/2023/07/24/fair-accountable-and-human-rights-centered-mining-sector-georgia-social-justice-center Radio Free Europe (2023): Georgian Miners' Strike Marked By Grisly Protests Enters 14th Day. https://www.rferl.org/a/georgian-miners-strike-grisly-protests/32465590.html	1,0

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

B	Mining and Quarrying					Scoring			**Reference**
	Are acute climate events in the country/region already relevant for the sector under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		**1,00**	0,00	1
					"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property			0,50	1,00	0,50	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,50	1,00	0,50	4
			1-3 expected to increase in the future			0,50	1,00	0,50	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			0,25	1,00	0,25	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			-0,50	+/-	-0,50	8
	Acute Climate Risk Score at Sector-Level:							**2,5**	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Damigos, D. (2012): Monetizing the impacts of climate change on the Greek mining sector. Mitigation and Adaptation Strategies for Global Change. 17. pp. 865-878. https://link.springer.com/article/10.1007/s11027-011-9349-z		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Damigos, D. (2012): Monetizing the impacts of climate change on the Greek mining sector. Mitigation and Adaptation Strategies for Global Change. 17. pp. 865-878. https://link.springer.com/article/10.1007/s11027-011-9349-z		0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Odell, S. D.; Bebbington, A.; Frey, K. E. (2018): Mining and climate change: A review and framework for analysis. The extractive industries and society. 5(1). pp. 201-214. https://www.sciencedirect.com/science/article/pii/S2214790X1730148X		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Odell, S. D.; Bebbington, A.; Frey, K. E. (2018): Mining and climate change: A review and framework for analysis. The extractive industries and society. 5(1). pp. 201-214. https://www.sciencedirect.com/science/article/pii/S2214790X1730148X		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Odell, S. D.; Bebbington, A.; Frey, K. E. (2018): Mining and climate change: A review and framework for analysis. The extractive industries and society. 5(1). pp. 201-214. https://www.sciencedirect.com/science/article/pii/S2214790X1730148X		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks	*See D Electricity, Gas, Steam and Air Conditioning Supply*					0,25
8	Score is reduced	x	Explanation/ Commentary	The availability of sources for the Georgian mining sector is very limited, the sources refered to above have another geographical focus.			-0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

B	Mining and Quarrying			**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?			**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?	"No"			
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property	0,50	1,00	0,50	2
			Expected impact on revenue	0,50	1,00	0,50	3
			Expected impact on costs	0,50	1,00	0,50	4
			1-3 expected to increase in the future	0,50	1,00	0,50	5
			Lack of adaptability of the business model	0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)	0,25	1,00	0,25	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)	-0,50	+/-	-0,50	8
	Chronic Climate Risk Score at Sector-Level:					2,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Damigos, D. (2012): Monetizing the impacts of climate change on the Greek mining sector. Mitigation and Adaptation Strategies for Global Change. 17. pp. 865-878. https://link.springer.com/article/10.1007/s11027-011-9349-z		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Damigos, D. (2012): Monetizing the impacts of climate change on the Greek mining sector. Mitigation and Adaptation Strategies for Global Change. 17. pp. 865-878. https://link.springer.com/article/10.1007/s11027-011-9349-z		0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Odell, S. D.; Bebbington, A.; Frey, K. E. (2018): Mining and climate change: A review and framework for analysis. The extractive industries and society. 5(1). pp. 201-214. https://www.sciencedirect.com/science/article/pii/S2214790X1730148X		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Odell, S. D.; Bebbington, A.; Frey, K. E. (2018): Mining and climate change: A review and framework for analysis. The extractive industries and society. 5(1). pp. 201-214. https://www.sciencedirect.com/science/article/pii/S2214790X1730148X		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Odell, S. D.; Bebbington, A.; Frey, K. E. (2018): Mining and climate change: A review and framework for analysis. The extractive industries and society. 5(1). pp. 201-214. https://www.sciencedirect.com/science/article/pii/S2214790X1730148X		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks				*See D Electricity, Gas, Steam and Air Conditioning Supply*		0,25
8	Score is reduced	x	Explanation/ Commentary		The availability of sources for the Georgian mining sector is very limited, the sources refered to above have another geographical focus.		-0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
B	Mining and Quarrying				**Scoring**		**Reference**
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%						
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%				**X**	1,50	
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"	**X**	Add-on Factor 0.5		0,50	
		"Yes, severely"		Add-on Factor 1			
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"	**X**	Add-on Factor 0.5		0,50	
	GHG-Emission Contribution Score at Sector-Level:					2,5	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, Tbilisi.		1,50
2	As soils also represent a significant CO_2 sink, soil degradation caused by mining must be considered in this context.		0,50
3	Sector D Electricity, Gas, Steam and Air Conditioning Supply		0,50

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								Reference
B	Mining and Quarrying					**Scoring**			
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					**Score**	**Weight**	**Total**	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		**1,00**	0,00	1
					"Yes, it is established"		**1,00**		
					"Yes, it is established and a further extention is planned"		**1,00**		
	"Yes"	**X**	Announced in the country under consideration				1,00	0,00	2
			Established in the country under consideration			0,75	2,00	1,50	3
			Further extension of this very regulation announced				0,50	0,00	4
			Announced in other relevant countries				0,50	0,00	5
			Established in other relevant countries				1,00	0,00	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses				1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:							1,5	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	3	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, Tblisi.	The report contains reference to restrictions on coal minining implemented in the previous years.	0,75
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector								
B	Mining and Quarrying					Scoring			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
			Strong effect on the business model				1,00	0,00	3
			1-2 expected to increase in the future				0,50	0,00	4
			1 or 2 obvious in other relevant countries				1,00	0,00	5
			Impact on the value chain				0,50	0,00	6
			Lack of adaptability of the business model				1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			-0,50	+/-	-0,50	8
	Impact of regulatory Change Risk Score at Sector-Level:							1,0	Max. 4
								Σ	

Reference							**Score**
1	No		Source Category				**0,00**
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	**x**	Source Category	**3**	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, Tblisi.	The report contains reference to restrictions on coal minining implemented in the previous years.	0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced	**x**	Explanation/ Commentary	The referenced measure was focused solely on coal mining and was concluded in the past, this is why the effect on the contemporary business cases seems to be limited.			-0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector						Score	Weight	Total	Reference
B	Mining and Quarrying						Scoring			Reference
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?						Score	Weight	Total	
		"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
						"No, to date it is just at theory/ study-level"		1,00	0,00	1
						"Yes, it is available and used in other relevant countries"		1,00		
						"Yes, it is heavily used in other relevant countries"		1,00		
		"Yes"	X	Use in the country under consideration				1,00	0,00	2
				Heavy use in the country under consideration				1,00	0,00	3
				Use in other relevant countries			0,75	0,50	0,38	4
				Heavy use in other relevant countries				1,00	0,00	5
				Accepted economic benefit of technology (lower costs and/or higher yields)			0,50	1,50	0,75	6
				Accepted strong economic benefit of technology (much lower costs and/or much higher yields)				1,00	0,00	7
				Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			-0,50	+/-	-0,50	8
	Technological Change Risk Score at Sector-Level:								0,5	Max. 4
									Σ	

Reference							Score
1	No		Source Category				**0,00**
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**3**	Murdock, H. E. et al. (2021): Renewables 2021-global status report. https://inis.iaea.org/search/search.aspx?orig_q=RN:52059346 Osmani, A.; Zhang, J.; Gonela, V.; Awudu, I. (2013): Electricity generation from renewables in the United States: Resource potential, current usage, technical status, challenges, strategies, policies, and future directions. Renewable and Sustainable Energy Reviews. 24. pp. 454-472. https://doi.org/10.1016/j.rser.2013.03.011		0,75
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	**x**	Source Category	**2**	Wood, J. (2021): Renewable energy is cheaper than previously thought, says a new report - and could be a gamechanger in the climate change battle. https://www.weforum.org/agenda/2021/10/how-cheap-can-renewable-energy-get/		0,50
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary	The sources mentioned only refer to the energy-relevant part of the mining industry (i.e. coal mining) and are not generally valid for the entire sector.			-0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					**Scoring**			**Reference**
B	Mining and Quarrying								
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"				
					"Yes, the use can be recognised in its beginnings"		**1,00**	0,00	1
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,50	2,00	1,00	2
			Perceived benefits in health from the user's perspective				1,00	0,00	3
			Perceived benefits in quality/durability from the user's perspective				1,00	0,00	4
			Perceived benefits to society and ecosystems				0,50	0,00	5
			Mass Media presence conveying a positive image				1,00	0,00	6
			VIP-Advocates				0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			-0,50	+/-	-0,50	8
	Customer Behavior Risk Score at Sector-Level:							0,5	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	2	Kåberger, T. (2018): Progress of renewable electricity replacing fossil fuels. Global Energy Interconnection. 1(1). pp. 48-52. https://www.sciencedirect.com/science/article/pii/S2096511718300069		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced	x	Explanation/ Commentary	The source mentioned only refers to the energy-relevant part of the mining industry (i.e. coal mining) and is not generally valid for the entire sector.			-0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

C Manufacturing

C 10 Manufacture of Food Products

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q4 2023**
Valid Until: **Q2 2025**

NACE Sector

C 10	**Manufacture of Food Products**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		2,0		2,3	1
		Chronic		2,5			2
	Transition Climate Risk	GHG-Emission Contribution		2,0		1,63	3
		Transitional Intensity	Probability of regulatory Change	2,0	1,3		4
			Economic Impact of regulatory Change	1,0			5
			Technological Change	1,0			6
			Customer Behavior	1,0			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0,75	2,3	8
		Other Environmental Risks		Add-on Factor	0,5		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
	ESG-Risk Score at Sector-Level:					6	6,13

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). UN Environment Programme (2021): Our global food system is the primary driver of biodiversity loss. https://www.unep.org/news-and-stories/press-release/our-global-food-system-primary-driver-biodiversity-loss	0,75
9	Ritchie, H.; Rosado, P.; Roser, M. (without date): Environmental Impacts of Food Production. https://ourworldindata.org/environmental-impacts-of-food	0,5
10	Business for Social Responsibility (2023): 10 Human Rights Priorities for the Food, Beverage, and Agriculture Sector. https://www.bsr.org/en/primers/10-human-rights-priorities-for-food-beverage-and-agriculture-sector	0,5
11	Foodprint (without date): Social Impacts of Our Food System. https://foodprint.org/the-total-footprint-of-our-food-system/issues/social-impacts-of-our-food-system/	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q4 2023
Valid Until: Q2 2025

C 10	Manufacture of Food Products					Scoring			Reference
	Are acute climate events in the country/region already relevant for the sector under consideration?					Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		1,00	0,00	1
					"Yes, very likely"		1,00		
	"Yes"		Observed loss of assets/property			0,00	1,00	0,00	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,50	1,00	0,50	4
		X	1-3 expected to increase in the future			0,00	1,00	0,00	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			0,50	1,00	0,50	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Acute Climate Risk Score at Sector-Level:							2,0	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Vermeulen, S. J.; Campbell, B. M.; Ingram, J. S. (2012): Climate change and food systems. Annual review of environment and resources. 37. pp. 195-222. https://www.annualreviews.org/doi/abs/10.1146/annurev-environ-020411-130608	The impacts on agriculture caused by climate change may be accompanied by a decline in revenue for food producers (e.g., due to crop failures).	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Vermeulen, S. J.; Campbell, B. M.; Ingram, J. S. (2012): Climate change and food systems. Annual review of environment and resources. 37. pp. 195-222. https://www.annualreviews.org/doi/abs/10.1146/annurev-environ-020411-130608	The impacts on agriculture due to climate change may be accompanied by higher costs for food producers (e.g., because of crop failures).	0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Smith, P.; Gregory, P. J. (2013): Climate change and sustainable food production. Proceedings of the nutrition society. 72(1). pp. 21-28. https://www.cambridge.org/core/journals/proceedings-of-the-nutrition-society/article/climate-change-and-sustainable-food-production/DE02043AE462DF7F91D88FD4349D38E7		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks	*See A Agriculture*					0,50
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q4 2023**
Valid Until: **Q2 2025**

NACE Sector

C 10	Manufacture of Food Products			**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?			**Score**	**Weight**	**Total**	
	"No"	Is it likely that this relevance will be given in the future?	"No"				
			"Yes"		**1,00**	0,00	1
			"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property	0,00	1,00	0,00	2
			Expected impact on revenue	0,50	1,00	0,50	3
			Expected impact on costs	0,50	1,00	0,50	4
			1-3 expected to increase in the future	0,00	1,00	0,00	5
			Lack of adaptability of the business model	0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)	0,75	1,00	0,75	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		+/-	0,00	8
	Chronic Climate Risk Score at Sector-Level:					2,5	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Yes						
	Yes, very likely						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	**x**	Source Category	**2**	Vermeulen, S. J.; Campbell, B. M.; Ingram, J. S. (2012): Climate change and food systems. Annual review of environment and resources. 37. pp. 195-222. https://www.annualreviews.org/doi/abs/10.1146/annurev-environ-020411-130608	The impacts on agriculture caused by climate change may be accompanied by a decline in revenue for food producers (e.g., due to crop failures).	0,50
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**2**	Vermeulen, S. J.; Campbell, B. M.; Ingram, J. S. (2012): Climate change and food systems. Annual review of environment and resources. 37. pp. 195-222. https://www.annualreviews.org/doi/abs/10.1146/annurev-environ-020411-130608	The impacts on agriculture due to climate change may be accompanied by higher costs for food producers (e.g., because of crop failures).	0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	**x**	Source Category	**2**	Smith, P.; Gregory, P. J. (2013): Climate change and sustainable food production. Proceedings of the nutrition society. 72(1). pp. 21-28. https://www.cambridge.org/core/journals/proceedings-of-the-nutrition-society/article/climate-change-and-sustainable-food-production/DE02043AE462DF7F91D88FD4349D38E7		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks	*See A Agriculture*					0,75
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q4 2023**
Valid Until: **Q2 2025**

NACE	Sector				**Scoring**		**Reference**
C 10	Manufacture of Food Products						
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%						
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%				X	1,50	
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"		Add-on Factor 1			
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"	X	Add-on Factor 0.5		0,50	
	GHG-Emission Contribution Score at Sector-Level:					2,0	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		1,50
2			0,00
3	*See A Agriculture*		0,50

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: Q4 2023
Valid Until: Q2 2025

NACE	Sector								
C 10	Manufacture of Food Products					Scoring			Reference
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					Score	Weight	Total	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		1,00	0,00	1
					"Yes, it is established"		1,00		
					"Yes, it is established and a further extention is planned"		1,00		
	"Yes"	X	Announced in the country under consideration			0,75	1,00	0,75	2
			Established in the country under consideration			0,00	2,00	0,00	3
			Further extension of this very regulation announced			0,00	0,50	0,00	4
			Announced in other relevant countries			0,75	0,50	0,38	5
			Established in other relevant countries			0,75	1,00	0,75	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:							2,0	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	The production of food depends largely on agriculture, which is covered by various measures mentioned in the source.	0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	2	European Commission (2020): Questions and Answers: Farm to Fork Strategy - building a healthy and fully sustainable food system. https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_885		0,75
	Indicator is strongly pronounced	x					
6	Indicator is given	x	Source Category	3	People's Republic of China (2021): Law of the People's Republic of China on Food Waste. http://www.npc.gov.cn/englishnpc/c23934/202112/f4b687aa91b0432baa4b6bdee8aa1418.shtml		0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q4 2023**
Valid Until: **Q2 2025**

NACE	Sector								
C 10	Manufacture of Food Products					**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?	☐	"No, probability score < 1.5 or no ESG impact assumed"				
				☐	"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
				☐	"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
				☐	"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,00	2,00	0,00	2
			Strong effect on the business model			0,00	1,00	0,00	3
			1-2 expected to increase in the future			0,00	0,50	0,00	4
			1 or 2 obvious in other relevant countries			0,75	1,00	0,75	5
			Impact on the value chain			0,75	0,50	0,38	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							1,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	3	People's Republic of China (2021): Law of the People's Republic of China on Food Waste. http://www.npc.gov.cn/englishnpc/c23934/202112/f4b687aa91b0432baa4b6bdee8aa1418.shtml		0,75
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123		0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q4 2023**
Valid Until: **Q2 2025**

NACE	Sector								
C 10	Manufacture of Food Products					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,50	1,00	0,50	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,00	1,50	0,00	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							**1,0**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	2	Nadiradze, K. (2016): Organic Farming as great challenge for Georgian farmers. Proceedings of the 17th International Conference on Organic Fruit-Growing. Hohenheim, Germany. pp. 15-17. https://www.ecofruit.net/wp-content/uploads/2020/04/65_Nadiradze_295bis297.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Sahota, A. (2023): The Global Market for Organic Food & Drink, at: The World of Organic Agriculture. Statistics and Emerging Trends 2023. Research Institute of Organic Agriculture FiBL, Frick, and IFOAM – Organics International. Edited by Willer, H.; Schlatter, B.; Trávníček, J.. Bonn. https://www.fibl.org/fileadmin/documents/shop/1254-organic-world-2023.pdf		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: Q4 2023
Valid Until: Q2 2025

NACE	Sector					Scoring			**Reference**
C 10	Manufacture of Food Products								
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"			0,00	1
					"Yes, the use can be recognised in its beginnings"		**1,00**		
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,00	2,00	0,00	2
			Perceived benefits in health from the user's perspective			0,50	1,00	0,50	3
			Perceived benefits in quality/durability from the user's perspective			0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems			0,75	0,50	0,38	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Customer Behavior Risk Score at Sector-Level:							1,0	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category	2	FAO – Food and Agriculture Organization of the United Nations (without date): Why is organic food more expensive than conventional food?. https://www.fao.org/organicag/oa-faq/oa-faq5/en/	Indicator is NOT given: Organic food has comparatively higher costs.	0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Lairon, D. (2010): Nutritional quality and safety of organic food. A review. Agronomy for sustainable development. Vol. 30. pp. 33–41. https://doi.org/10.1051/agro/2009019		0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	2	FAO – Food and Agriculture Organization of the United Nations (without date): What are the environmental benefits of organic agriculture?. https://www.fao.org/organicag/oa-faq/oa-faq6/en/		0,75
	Indicator is strongly pronounced	x					
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category	1	Potters, J. (2018): Meghan Markle, Taylor Swift, and Other Celebrities You Never Knew Promoted Fast Food. https://www.marieclaire.com/celebrity/g22746554/celebrities-fast-food-advertisements/ People For The Ethical Treatment Of Animals (2017): Kylie Jenner Is Trying Vegan—and We're All About It. https://www.peta.org/blog/kylie-jenner-vegan/	Indicator is NOT given: Although some celebrities promote alternative lifestyles such as veganism, more advertise unsustainable products such as fast food.	0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

C 12 Manufacture of Tobacco Products

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

C 12	**Manufacture of Tobacco Products**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		2,0		2,3	1
		Chronic		2,5			2
	Transition Climate Risk	GHG-Emission Contribution		3,0		2,88	3
		Transitional Intensity	Probability of regulatory Change	3,0	2,8		4
			Economic Impact of regulatory Change	3,0			5
			Technological Change	2,0			6
			Customer Behavior	3,0			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	1,00	3,3	8
		Other Environmental Risks		Add-on Factor	0,5		9
		Possible Human Rights Issues		Add-on Factor	0,75		10
		Other Social Risks		Add-on Factor	1,0		11
					ESG-Risk Score at Sector-Level:	**8**	8,38

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). World Health Organization (2017): Tobacco and its environmental impact: an overview. https://apps.who.int/iris/bitstream/handle/10665/255574/9789241512497-eng.pdf	1,0
9	World Health Organization (2017): Tobacco and its environmental impact: an overview. https://apps.who.int/iris/bitstream/handle/10665/255574/9789241512497-eng.pdf	0,5
10	Sibeko, S. (2018): A Bitter Harvest – Child Labor and Human Rights Abuses on Tobacco Farms in Zimbabwe. https://www.hrw.org/report/2018/04/05/bitter-harvest/child-labor-and-human-rights-abuses-tobacco-farms-zimbabwe	0,8
11	Roser, M. (2021): Smoking: How large of a global problem is it? And how can we make progress against it?. https://ourworldindata.org/smoking-big-problem-in-brief	1,0

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

C 12	Manufacture of Tobacco Products					Scoring			Reference
	Are acute climate events in the country/region already relevant for the sector under consideration?					Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		1,00	0,00	1
					"Yes, very likely"		1,00		
	"Yes"	X	Observed loss of assets/property			0,50	1,00	0,50	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,00	1,00	0,00	4
			1-3 expected to increase in the future			0,00	1,00	0,00	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			0,50	1,00	0,50	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Acute Climate Risk Score at Sector-Level:							2,0	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Nurjani, E.; Harini, R.; Sekaranom, A. B.; Mutaqqin, A. S. (2020): Tobacco farmers Perspective towards increasing climate change risk on agriculture sector: a case study of Temanggung-Indonesia. at IOP Conference Series: Earth and Environmental Science (Vol. 451, No. 1, p. 012101). https://iopscience.iop.org/article/10.1088/1755-1315/451/1/012101/meta		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Nurjani, E.; Harini, R.; Sekaranom, A. B.; Mutaqqin, A. S. (2020): Tobacco farmers Perspective towards increasing climate change risk on agriculture sector: a case study of Temanggung-Indonesia. at IOP Conference Series: Earth and Environmental Science (Vol. 451, No. 1, p. 012101). https://iopscience.iop.org/article/10.1088/1755-1315/451/1/012101/meta		0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Nurjani, E.; Harini, R.; Sekaranom, A. B.; Mutaqqin, A. S. (2020): Tobacco farmers Perspective towards increasing climate change risk on agriculture sector: a case study of Temanggung-Indonesia. at IOP Conference Series: Earth and Environmental Science (Vol. 451, No. 1, p. 012101). https://iopscience.iop.org/article/10.1088/1755-1315/451/1/012101/meta		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks	*See A Agriculture*					0,50
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector				Score	Weight	Total	Reference
C 12	Manufacture of Tobacco Products				**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?	"No"				
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property		0,50	1,00	0,50	2
			Expected impact on revenue		0,50	1,00	0,50	3
			Expected impact on costs		0,00	1,00	0,00	4
			1-3 expected to increase in the future		0,00	1,00	0,00	5
			Lack of adaptability of the business model		0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)		0,75	1,00	0,75	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			+/-	0,00	8
	Chronic Climate Risk Score at Sector-Level:						2,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Nurjani, E.; Harini, R.; Sekaranom, A. B.; Mutaqqin, A. S. (2020): Tobacco farmers Perspective towards increasing climate change risk on agriculture sector: a case study of Temanggung-Indonesia. at IOP Conference Series: Earth and Environmental Science (Vol. 451, No. 1, p. 012101). https://iopscience.iop.org/article/10.1088/1755-1315/451/1/012101/meta		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Nurjani, E.; Harini, R.; Sekaranom, A. B.; Mutaqqin, A. S. (2020): Tobacco farmers Perspective towards increasing climate change risk on agriculture sector: a case study of Temanggung-Indonesia. at IOP Conference Series: Earth and Environmental Science (Vol. 451, No. 1, p. 012101). https://iopscience.iop.org/article/10.1088/1755-1315/451/1/012101/meta		0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Muttaqin, A. S.; Suarma, U.; Nurjani, E.; Kurniadhini, F.; Prabaningrum, R.; Wulandari, R. (2019): The impact of climate variability on tobacco productivity over Temanggung Regency, Indonesia. at E3S Web of Conferences (Vol. 76, p. 04003). https://doi.org/10.1051/e3sconf/20197604003		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks	*See A Agriculture*					0,75
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector				Scoring		Reference
C 12	Manufacture of Tobacco Products						
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				Percentage-Range	Total	
				X ≥ 10%			
				10% > X ≥ 7.5%			
				7.5% > X ≥ 5%			
				5% > X ≥ 1%			
				1% > X ≥ 0.5%			
				0.5% > X ≥ 0.25%	X	1,50	
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"	X	Add-on Factor 1		1,00	
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"	X	Add-on Factor 0.5		0,50	
	GHG-Emission Contribution Score at Sector-Level:					3,0	Max. 4

Σ

Reference			**Score**
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		1,50
2	World Health Organization (2017): Tobacco and its environmental impact: an overview. https://apps.who.int/iris/bitstream/handle/10665/255574/9789241512497-eng.pdf	The Tobacco industry is often linked to deforestation.	1,00
3	*See A Agriculture*		0,50

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector				Score	Weight	Total	Reference
C 12	Manufacture of Tobacco Products				**Scoring**			**Reference**
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?				**Score**	**Weight**	**Total**	
"No"		Is this kind of regulation already present in other relevant countries?		"No"				
				"Yes, it is planned"		**1,00**	0,00	1
				"Yes, it is established"		**1,00**		
				"Yes, it is established and a further extention is planned"		**1,00**		
"Yes"	**X**	Announced in the country under consideration			0,00	1,00	0,00	2
		Established in the country under consideration			1,00	2,00	2,00	3
		Further extension of this very regulation announced			0,00	0,50	0,00	4
		Announced in other relevant countries			0,50	0,50	0,25	5
		Established in other relevant countries			0,75	1,00	0,75	6
		Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,00	1,00	0,00	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
		Probability of regulatory Change Risk Score at Sector-Level:					3,0	Max. 4

Σ

Reference							**Score**
	Yes, planned						**0,00**
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category	**3**	President of Georgia M. Saakashvili (2017): Law of Georgia On Tobacco Control. https://www.globaltobaccocontrol.org/sites/default/files/2021-04/Law_of_Georgia_on_Tobacco_Control_ENG_translation.pdf		1,00
	Indicator is strongly pronounced	**x**					
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	**x**	Source Category	**2**	Nea Zealand Parliament (2023): Smokefree Environments and Regulated Products (Smoked Tobacco) Amendment Bill. https://bills.parliament.nz/v/6/cad89158-461d-4392-aad3-e499142a0114?Tab=history		0,50
	Indicator is strongly pronounced						
6	Indicator is given	**x**	Source Category	**3**	Bundestag (2007): Law to Protect Against the Dangers of Passive Smoking [Federal Non-Smoker's Protection Act]. https://assets.tobaccocontrollaws.org/uploads/legislation/Germany/Germany-Law-on-Smoke-Free.pdf		0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
C 12	Manufacture of Tobacco Products					**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
			Strong effect on the business model			0,75	1,00	0,75	3
			1-2 expected to increase in the future			0,00	0,50	0,00	4
			1 or 2 obvious in other relevant countries			0,75	1,00	0,75	5
			Impact on the value chain			0,00	0,50	0,00	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							**3,0**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	x	Source Category	3	President of Georgia M. Saakashvili (2017): Law of Georgia On Tobacco Control. https://www.globaltobaccocontrol.org/sites/default/files/2021-04/Law_of_Georgia_on_Tobacco_Control_ENG_translation.pdf		0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	3	President of Georgia M. Saakashvili (2017): Law of Georgia On Tobacco Control. https://www.globaltobaccocontrol.org/sites/default/files/2021-04/Law_of_Georgia_on_Tobacco_Control_ENG_translation.pdf World Health Organization (2018): New law on cigarettes and tobacco coming into effect in Georgia. https://www.who.int/europe/news/item/01-05-2018-new-law-on-cigarettes-and-tobacco-coming-into-effect-in-georgia	As the WHO emphasizes the law as one of the strongest in the EU, a strong effect on the business model can be derived.	0,75
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	3	Bundestag (2007): Law to Protect Against the Dangers of Passive Smoking [Federal Non-Smoker's Protection Act]. https://assets.tobaccocontrollaws.org/uploads/legislation/Germany/Germany-Law-on-Smoke-Free.pdf		0,75
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE Sector

C 12	Manufacture of Tobacco Products					Scoring			Reference
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					Score	Weight	Total	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		1,00	0,00	1
					"Yes, it is available and used in other relevant countries"		1,00		
					"Yes, it is heavily used in other relevant countries"		1,00		
	"Yes"	X	Use in the country under consideration			0,75	1,00	0,75	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,75	1,50	1,13	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							2,0	Max. 4

Σ

Reference							Score
1	No		Source Category			The substitutes to conventional tobacco use such as e-cigarettes cannot be considered sustainable. The only sustainable alternative is the termination of tobacco consumption.	**0,00**
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given		Source Category	**2**	The World Bank (without date): Prevalence of current tobacco use (% of adults). https://data.worldbank.org/indicator/SH.PRV.SMOK		0,75
	Indicator is strongly pronounced	**x**					
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**2**	Reitsma, M. B. et al. (2021): Spatial, temporal, and demographic patterns in prevalence of smoking tobacco use and attributable disease burden in 204 countries and territories, 1990–2019: a systematic analysis from the Global Burden of Disease Study 2019. 397(10292). pp. 2337-2360. https://doi.org/10.1016/S0140-6736(21)01169-7	Even though the prevalence of smokers is falling globally, the overall number is still increasing due to population growth. In this respect, the indicator can only be taken as "given".	0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category	**2**	Giné, X.; Karlan, D.; Zinman, J. (2010): Put your money where your butt is: a commitment contract for smoking cessation. American Economic Journal: Applied Economics. 2(4). pp. 213-235. https://www.aeaweb.org/articles?id=10.1257/app.2.4.213		0,75
	Indicator is strongly pronounced	**x**					
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

C 12	Manufacture of Tobacco Products					**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"			0,00	1
					"Yes, the use can be recognised in its beginnings"		**1,00**		
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,75	2,00	1,50	2
			Perceived benefits in health from the user's perspective			0,75	1,00	0,75	3
			Perceived benefits in quality/durability from the user's perspective			0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems			0,75	0,50	0,38	5
			Mass Media presence conveying a positive image			0,25	1,00	0,25	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
					Customer Behavior Risk Score at Sector-Level:			**3,0**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category	2	Giné, X.; Karlan, D.; Zinman, J. (2010): Put your money where your butt is: a commitment contract for smoking cessation. American Economic Journal: Applied Economics. 2(4). pp. 213-235. https://www.aeaweb.org/articles?id=10.1257/app.2.4.213		0,75
	Indicator is strongly pronounced	x					
3	Indicator is given		Source Category	2	Ritchie, H.; Roser, M. (2023): Smoking. https://ourworldindata.org/smoking		0,75
	Indicator is strongly pronounced	x					
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	2	World Health Organization (2017): Tobacco and its environmental impact: an overview. https://apps.who.int/iris/bitstream/handle/10665/255574/9789241512497-eng.pdf		0,75
	Indicator is strongly pronounced	x					
6	Indicator is given	x	Source Category	1	Korolkovaite, I. (2016): 132 Of The Most Powerful Anti-Smoking Ads Ever Created. https://www.boredpanda.com/creative-anti-smoking-ads/?utm_source=ecosia&utm_medium=referral&utm_campaign=organic		0,25
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

C 19 Manufacture of Coke and refined Petroleum Products

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
C 19	**Manufacture of Coke and refined Petroleum Products**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		2,5		2,5	1
		Chronic		2,5			2
	Transition Climate Risk	GHG-Emission Contribution		3,5		3,25	3
		Transitional Intensity	Probability of regulatory Change	3,5	3,0		4
			Economic Impact of regulatory Change	2,5			5
			Technological Change	3,0			6
			Customer Behavior	3,0			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0,25	2,0	8
		Other Environmental Risks		Add-on Factor	0,75		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
					ESG-Risk Score at Sector-Level:	**8**	7,75

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Rauner, S.; Bauer, N.; Dirnaichner, A.; Dingenen, R. V.; Mutel, C.; Luderer, G. (2020): Coal-exit health and environmental damage reductions outweigh economic impacts. Nature Climate Change. Vol. 10. Issue 4. pp. 308-312. https://www.nature.com/articles/s41558-020-0728-x.	0,25
9	Rauner, S.; Bauer, N.; Dirnaichner, A.; Dingenen, R. V.; Mutel, C.; Luderer, G. (2020): Coal-exit health and environmental damage reductions outweigh economic impacts. Nature Climate Change. Vol. 10. Issue 4. pp. 308-312. https://www.nature.com/articles/s41558-020-0728-x.	0,75
10	Gomez, K.; Regaignon, G. (2015): Digging deeper: the impact of coal on human rights. https://www.opendemocracy.net/en/openglobalrights-openpage/digging-deeper-impact-of-coal-on-human-rights/	0,5
11	Finkelman, R. B.; Wolfe, A.; Hendryx, M. S. (2021): The future environmental and health impacts of coal. Energy Geoscience. Vol. 2. Issue 2. pp. 99-112. https://doi.org/10.1016/j.engeos.2020.11.001	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

C 19	Manufacture of Coke and refined Petroleum Products				Scoring			**Reference**
	Are acute climate events in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?	"No"			0,00	1
				"Yes"		**1,00**		
				"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property		0,50	1,00	0,50	2
			Expected impact on revenue		0,50	1,00	0,50	3
			Expected impact on costs		0,50	1,00	0,50	4
			1-3 expected to increase in the future		0,50	1,00	0,50	5
			Lack of adaptability of the business model		0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			+/-	0,00	8
	Acute Climate Risk Score at Sector-Level:						2,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Sieber, J. (2013): Impacts of, and adaptation options to, extreme weather events and climate change concerning thermal power plants. Climatic Change. Vol. 121. pp. 55–66. https://doi.org/10.1007/s10584-013-0915-0		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Sieber, J. (2013): Impacts of, and adaptation options to, extreme weather events and climate change concerning thermal power plants. Climatic Change. Vol. 121. pp. 55–66. https://doi.org/10.1007/s10584-013-0915-0	The source mentions for example damage to storage tanks caused by wind pressure or the impact of debris. In the case of severe damage (e.g. oil leaks), this leads to a loss of revenue.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Sieber, J. (2013): Impacts of, and adaptation options to, extreme weather events and climate change concerning thermal power plants. Climatic Change. Vol. 121. pp. 55–66. https://doi.org/10.1007/s10584-013-0915-0		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Whitt, J.; Gordon, S. (2023): This is the economic cost of extreme weather. https://www.weforum.org/agenda/2023/01/extreme-weather-economic-cost-wef23/		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Sieber, J. (2013): Impacts of, and adaptation options to, extreme weather events and climate change concerning thermal power plants. Climatic Change. Vol. 121. pp. 55–66. https://doi.org/10.1007/s10584-013-0915-0	Although reference is made to adaptation options, these are associated with additional expense.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector							
C 19	Manufacture of Coke and refined Petroleum Products				Scoring			Reference
	Are chronic climate developments in the country/region already relevant for the sector under consideration?				Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?	"No"				
				"Yes"		1,00	0,00	1
				"Yes, very likely"		1,00		
	"Yes"	X	Observed loss of assets/property		0,50	1,00	0,50	2
			Expected impact on revenue		0,50	1,00	0,50	3
			Expected impact on costs		0,50	1,00	0,50	4
			1-3 expected to increase in the future		0,50	1,00	0,50	5
			Lack of adaptability of the business model		0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)			1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			+/-	0,00	8
	Chronic Climate Risk Score at Sector-Level:						2,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Sieber, J. (2013): Impacts of, and adaptation options to, extreme weather events and climate change concerning thermal power plants. Climatic Change. Vol. 121. pp. 55–66. https://doi.org/10.1007/s10584-013-0915-0		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Van Vliet, M. T.; Yearsley, J. R.; Ludwig, F.; Vögele, S.; Lettenmaier, D. P.; Kabat, P. (2012): Vulnerability of US and European electricity supply to climate change. Nature Climate Change. Vol. 2. Issue 9. pp. 676-681. https://doi.org/10.1038/nclimate1546	The source refers to the vulnerability of power plants to water shortages. This is also relevant for the production of these energy resources as there could be less demand or a general reduction in attractiveness due to downtimes.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Sieber, J. (2013): Impacts of, and adaptation options to, extreme weather events and climate change concerning thermal power plants. Climatic Change. Vol. 121. pp. 55–66. https://doi.org/10.1007/s10584-013-0915-0		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Van Vliet, M.; Wiberg, D.; Leduc, S. et al. (2020): Power-generation system vulnerability and adaptation to changes in climate and water resources. Nature Climate Change. Vol. 6. pp. 375–380. https://doi.org/10.1038/nclimate290	The source shows a reduction in usable capacity from 81-86% of thermoelectric power plants worldwide for the period 2040-2069. This is also relevant for the production of these energy resources as there could be less demand or a general reduction in attractiveness due to downtimes.	0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Van Vliet, M. T.; Yearsley, J. R.; Ludwig, F.; Vögele, S.; Lettenmaier, D. P.; Kabat, P. (2012): Vulnerability of US and European electricity supply to climate change. Nature Climate Change. Vol. 2. Issue 9. pp. 676-681. https://doi.org/10.1038/nclimate1546	The source refers to the need for improved climate adaptation strategies in the thermoelectric power sector. This is also relevant for the production of these energy resources as there could be less demand or a general reduction in attractiveness due to downtimes.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
C 19	Manufacture of Coke and refined Petroleum Products				**Scoring**		**Reference**
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
				X ≥ 10%			
				10% > X ≥ 7.5%			
				7.5% > X ≥ 5%			
				5% > X ≥ 1%			
				1% > X ≥ 0.5%	**X**	2,00	
				0.5% > X ≥ 0.25%			
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"	**X**	Add-on Factor 1		1,00	
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"	**X**	Add-on Factor 0.25		0,25	
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					3,5	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi. Ritchie, H.; Rosado, P.; Roser, M. (2020): CO2 emissions by fuel. https://ourworldindata.org/emissions-by-fuel	The greenhouse gas emissions stated in the source for this sector (score 1) are considered to be significantly too low in the context of the high emission values for coal and oil. To enable a more realistic assessment, a surcharge of plus one is added.	2,00
2	Pilkington, B. (2022): Converting Coal Mines into Carbon Sinks to Reestablish Habitats and Protect the Environment. https://www.azocleantech.com/article.aspx?ArticleID=1431		1,00
3	*See D Electricity*		0,25

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector							
C 19	Manufacture of Coke and refined Petroleum Products				**Scoring**			**Reference**
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?				**Score**	**Weight**	**Total**	
"No"		Is this kind of regulation already present in other relevant countries?		"No"				
				"Yes, it is planned"		1,00	0,00	1
				"Yes, it is established"		1,00		
				"Yes, it is established and a further extention is planned"		1,00		
"Yes"	X			Announced in the country under consideration	0,75	1,00	0,75	2
				Established in the country under consideration	0,75	2,00	1,50	3
				Further extension of this very regulation announced	0,00	0,50	0,00	4
				Announced in other relevant countries	0,50	0,50	0,25	5
				Established in other relevant countries	0,75	1,00	0,75	6
				Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses	0,00	1,00	0,00	7
				Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:						3,5	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	The source often refers to renewable energies, which are more environmentally friendly alternatives to fossil fuels.	0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	3	President of Georgia S. Zourabichvili (2019): The Law of Georgia On Promotion of Production and Utilization of Energy from Renewable Sources. https://ppp.gov.ge/app/uploads/2022/07/law-on-ON-PROMOTING-THE-GENERATION-AND-CONSUMPTION-OF-ENERGY-FROM-RENEWABLE-SOURCES.pdf		0,75
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Coutihno, C.; Bowie, A. (2023): New laws passed to bolster energy security and deliver net zero. https://www.gov.uk/government/news/new-laws-passed-to-bolster-energy-security-and-deliver-net-zero		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Press and Information Office of the Federal Government (without date): Ending coal-generated power. https://www.bundesregierung.de/breg-en/service/archive/kohleausstiegsgesetz-1717014	Please note that the cited source refers to the law that has already been implemented, which results in source category 3.	0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category	2	United Nations Development Programme (2021): Georgians see climate change as a top-three challenge for humanity. https://www.undp.org/georgia/press-releases/georgians-see-climate-change-top-three-challenge-humanity	Indicator is NOT given: According to a survey, Georgians know what climate change is and the vast majority see it as a direct and immediate threat, but only a few are taking action.	0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector							
C 19	Manufacture of Coke and refined Petroleum Products				**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?				**Score**	**Weight**	**Total**	
"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
				"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
				"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
				"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
		Strong effect on the business model			0,00	1,00	0,00	3
		1-2 expected to increase in the future			0,00	0,50	0,00	4
		1 or 2 obvious in other relevant countries			0,75	1,00	0,75	5
		Impact on the value chain			0,75	0,50	0,38	6
		Lack of adaptability of the business model			0,00	1,00	0,00	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:						**2,5**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	x	Source Category	3	President of Georgia S. Zourabichvili (2019): The Law of Georgia On Promotion of Production and Utilization of Energy from Renewable Sources. https://ppp.gov.ge/app/uploads/2022/07/law-on-ON-PROMOTING-THE-GENERATION-AND-CONSUMPTION-OF-ENERGY-FROM-RENEWABLE-SOURCES.pdf		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	3	Press and Information Office of the Federal Government (without date): Ending coal-generated power. https://www.bundesregierung.de/breg-en/service/archive/kohleausstiegsgesetz-1717014	Please note that the cited source refers to the law that has already been implemented, which results in source category 3.	0,75
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	President of Georgia S. Zourabichvili (2019): The Law of Georgia On Promotion of Production and Utilization of Energy from Renewable Sources. https://ppp.gov.ge/app/uploads/2022/07/law-on-ON-PROMOTING-THE-GENERATION-AND-CONSUMPTION-OF-ENERGY-FROM-RENEWABLE-SOURCES.pdf Press and Information Office of the Federal Government (without date): Ending coal-generated power. https://www.bundesregierung.de/breg-	The laws cited are particularly relevant for the energy sector.	0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					Scoring			**Reference**
C 19	Manufacture of Coke and refined Petroleum Products								
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,75	1,00	0,75	2
			Heavy use in the country under consideration			0,75	1,00	0,75	3
			Use in other relevant countries			0,75	0,50	0,38	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,75	1,50	1,13	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							**3,0**	Max. 4

Σ

Reference							**Score**
1	No		Source Category				**0,00**
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	**3**	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	In 2018, renewable energies accounted for 83% of electricity generation in Georgia.	0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	**3**	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	In 2018, renewable energies accounted for 83% of electricity generation in Georgia.	0,75
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	**3**	Osmani, A.; Zhang, J.; Gonela, V.; Awudu, I. (2013): Electricity generation from renewables in the United States: Resource potential, current usage, technical status, challenges, strategies, policies, and future directions. Renewable and Sustainable Energy Reviews. Vol. 24. pp. 454-472. https://doi.org/10.1016/j.rser.2013.03.011		0,75
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category	**2**	Wood, J. (2021): Renewable energy is cheaper than previously thought, says a new report - and could be a gamechanger in the climate change battle. https://www.weforum.org/agenda/2021/10/how-cheap-can-renewable-energy-get/		0,75
	Indicator is strongly pronounced	x					
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					Scoring			Reference
C 19	Manufacture of Coke and refined Petroleum Products								
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					Score	Weight	Total	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"			0,00	1
					"Yes, the use can be recognised in its beginnings"		1,00		
					"Yes, the use can be clearly recognised"		1,00		
					"Yes, the strong use can be clearly recognised"		1,00		
	"Yes"	X	Perceived benefits in costs/maintenance from the user's perspective			0,75	2,00	1,50	2
			Perceived benefits in health from the user's perspective			0,75	1,00	0,75	3
			Perceived benefits in quality/durability from the user's perspective			0,50	1,00	0,50	4
			Perceived benefits to society and ecosystems			0,50	0,50	0,25	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Customer Behavior Risk Score at Sector-Level:							3,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category	2	Wood, J. (2021): Renewable energy is cheaper than previously thought, says a new report - and could be a gamechanger in the climate change battle. https://www.weforum.org/agenda/2021/10/how-cheap-can-renewable-energy-get/		0,75
	Indicator is strongly pronounced	x					
3	Indicator is given	x	Source Category	3	Ram, M.; Child, M.; Aghahosseini, A.; Bogdanov, D.; Lohrmann, A.; Breyer, C. (2018): A comparative analysis of electricity generation costs from renewable, fossil fuel and nuclear sources in G20 countries for the period 2015-2030. Journal of cleaner production. 199. pp. 687-704. https://www.sciencedirect.com/science/article/abs/pii/S0959652618321486		0,75
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Kåberger, T. (2018): Progress of renewable electricity replacing fossil fuels. Global Energy Interconnection. Vol. 1. Issue 1. pp. 48-52. https://www.sciencedirect.com/science/article/pii/S2096511718300069		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Kåberger, T. (2018): Progress of renewable electricity replacing fossil fuels. Global Energy Interconnection. Vol. 1. Issue 1. pp. 48-52. https://www.sciencedirect.com/science/article/pii/S2096511718300069		0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

C 20 Manufacture of Chemicals and chemical Products

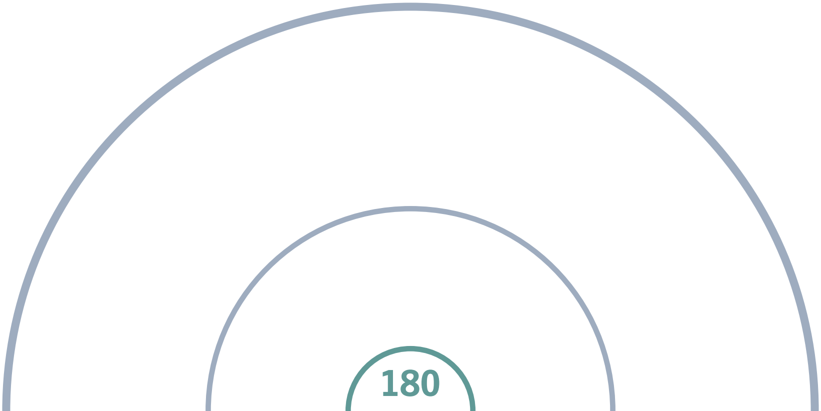
Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector						
C 20	**Manufacture of Chemicals and chemical Products**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		3,0		2,8	1
		Chronic		2,5			2
	Transition Climate Risk	GHG-Emission Contribution		3,5		2,56	3
		Transitional Intensity	Probability of regulatory Change	3,5	1,6		4
			Economic Impact of regulatory Change	1,0			5
			Technological Change	1,0			6
			Customer Behavior	1,0			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0,5	2,3	8
		Other Environmental Risks		Add-on Factor	0,75		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
	ESG-Risk Score at Sector-Level:					8	7,56

Σ



Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Kurth, T.; Wübbels, G.; Portafaix, A.; Meyer zum Felde, A.; Zielcke, S. (2021): The biodiversity crisis is a business crisis. Boston Consulting Group. https://web-assets.bcg.com/fb/5e/74af5531468e9c1d4dd5c9fc0bd7/bcg-the-biodiversity-crisis-is-a-business-crisis-mar-2021-rr.pdf	0,5
9	Business and Human Rights Resource Centre (2018): Business & human rights in the chemical industry: An assessment of company responses to human rights issues. https://media.business-humanrights.org/media/documents/files/BHRRC_Chemical_Briefing_30_Jan_2018.pdf	0,75
10	Business and Human Rights Resource Centre (2018): Business & human rights in the chemical industry: An assessment of company responses to human rights issues. https://media.business-humanrights.org/media/documents/files/BHRRC_Chemical_Briefing_30_Jan_2018.pdf	0,5
11	Lehtmets, J. (2021): Understanding social implications crucial for chemical safety. https://www.sei.org/features/understanding-social-implications-crucial-for-chemical-safety/	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

C 20	Manufacture of Chemicals and chemical Products				**Scoring**			**Reference**
	Are acute climate events in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?	"No"				
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property		0,50	1,00	0,50	2
			Expected impact on revenue		0,50	1,00	0,50	3
			Expected impact on costs		0,50	1,00	0,50	4
			1-3 expected to increase in the future		0,50	1,00	0,50	5
			Lack of adaptability of the business model		0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)		0,25	1,00	0,25	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			+/-	0,00	8
	Acute Climate Risk Score at Sector-Level:						3,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Renni, E.; Krausmann, E.; Cozzani, V. (2010): Industrial accidents triggered by lightning. Journal of hazardous materials. Vol. 184. Issue 1-3. pp. 42-48. https://doi.org/10.1016/j.jhazmat.2010.07.118		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Renni, E.; Krausmann, E.; Cozzani, V. (2010): Industrial accidents triggered by lightning. Journal of hazardous materials. Vol. 184. Issue 1-3. pp. 42-48. https://doi.org/10.1016/j.jhazmat.2010.07.118		0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Renni, E.; Krausmann, E.; Cozzani, V. (2010): Industrial accidents triggered by lightning. Journal of hazardous materials. Vol. 184. Issue 1-3. pp. 42-48. https://doi.org/10.1016/j.jhazmat.2010.07.118		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Whitt, J.; Gordon, S. (2023): This is the economic cost of extreme weather. https://www.weforum.org/agenda/2023/01/extreme-weather-economic-cost-wef23/		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Bangert, M. J. (2019): Preparing for Climate Change (BASF). https://www.umweltbundesamt.de/sites/default/files/medien/376/dokumente/06-03_preparing_for_climate_change_-_basf_20190914.pdf		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks	*See D Electricity, Gas, Steam and Air Conditioning Supply/ C19 Manufacture of Coke and refined Petroleum Products*					0,25
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector					Scoring			Reference
C 20	Manufacture of Chemicals and chemical Products								
	Are chronic climate developments in the country/region already relevant for the sector under consideration?					Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		1,00	0,00	1
					"Yes, very likely"		1,00		
	"Yes"	X	Observed loss of assets/property			0,00	1,00	0,00	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,50	1,00	0,50	4
			1-3 expected to increase in the future			0,75	1,00	0,75	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)			0,25	1,00	0,25	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Chronic Climate Risk Score at Sector-Level:							2,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Bangert, M. J. (2019): Preparing for Climate Change (BASF). https://www.umweltbundesamt.de/sites/default/files/medien/376/dokumente/06-03_preparing_for_climate_change_-_basf_20190914.pdf		0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Bangert, M. J. (2019): Preparing for Climate Change (BASF). https://www.umweltbundesamt.de/sites/default/files/medien/376/dokumente/06-03_preparing_for_climate_change_-_basf_20190914.pdf		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	3	IPCC (2021): Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Edited by: Masson-Delmotte, V.; Zhai, P.; Pirani, A.; Connors, S.L.; Péan, C.; Berger, S.; Caud, N.; Chen, Y.; Goldfarb, L.; Gomis, M. I.; Huang, M.; Leitzell, K.; Lonnoy, E.; Matthews, J. B. R.; Maycock, T. K.; Waterfield, T.; Yelekçi, O.; Yu, R.; Zhou, B.. Cambridge University Press. doi:10.1017/9781009157896.		0,75
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Bangert, M. J. (2019): Preparing for Climate Change (BASF). https://www.umweltbundesamt.de/sites/default/files/medien/376/dokumente/06-03_preparing_for_climate_change_-_basf_20190914.pdf		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks	*See D Electricity, Gas, Steam and Air Conditioning Supply/ C19 Manufacture of Coke and refined Petroleum Products*					0,25
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector				Scoring		Reference
C 20	Manufacture of Chemicals and chemical Products						
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%						
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%				X	3,00	
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%						
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"		Add-on Factor 1			
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"	X	Add-on Factor 0.25		0,25	
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					3,5	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		3,00
2			0,00
3	*See D Electricity*		0,25

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector							
C 20	Manufacture of Chemicals and chemical Products				Scoring			Reference
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?				Score	Weight	Total	
"No"		Is this kind of regulation already present in other relevant countries?		"No"				
				"Yes, it is planned"		1,00	0,00	1
				"Yes, it is established"		1,00		
				"Yes, it is established and a further extention is planned"		1,00		
"Yes"	X	Announced in the country under consideration			0,75	1,00	0,75	2
		Established in the country under consideration			0,75	2,00	1,50	3
		Further extension of this very regulation announced			0,50	0,50	0,25	4
		Announced in other relevant countries			0,50	0,50	0,25	5
		Established in other relevant countries			0,75	1,00	0,75	6
		Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,00	1,00	0,00	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:						3,5	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123		0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	3	President of Georgia E. Shevardnadze (1998): LAW OF GEORGIA ON HAZARDOUS CHEMICAL SUBSTANCES. https://events.development.asia/system/files/materials/2022/12/202212-geo-law-georgia-hazardous-chemical-substances.pdf		0,75
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	United Nations Environment Programme (2022): Georgia: enhancing regulation of hazardous chemicals and waste. https://www.unep.org/technical-highlight/georgia-enhancing-regulation-hazardous-chemicals-and-waste		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Directorate-General for Environment (2022): Chemicals: Commission seeks views on revision of REACH, the EU's chemicals legislation. https://environment.ec.europa.eu/news/chemicals-commission-seeks-views-revision-reach-eus-chemicals-legislation-2022-01-20_en		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	European Parliament; European Council (2006): REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02006R1907-20221217		0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					Scoring			**Reference**
C 20	Manufacture of Chemicals and chemical Products								
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				1
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,00	2,00	0,00	2
			Strong effect on the business model			0,00	1,00	0,00	3
			1-2 expected to increase in the future			0,50	0,50	0,25	4
			1 or 2 obvious in other relevant countries			0,75	1,00	0,75	5
			Impact on the value chain			0,00	0,50	0,00	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							1,0	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given		Source Category	**3**	President of Georgia E. Shevardnadze (1998): LAW OF GEORGIA ON HAZARDOUS CHEMICAL SUBSTANCES. https://events.development.asia/system/files/materials/2022/12/202212-geo-law-georgia-hazardous-chemical-substances.pdf	Indicator is NOT given: As the law has already been in force for a long time, no new impact on the business model is expected.	0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**2**	United Nations Environment Programme (2022): Georgia: enhancing regulation of hazardous chemicals and waste. https://www.unep.org/technical-highlight/georgia-enhancing-regulation-hazardous-chemicals-and-waste	Given the source cited and Georgia's possible entry into the EU, it is not unlikely that there could be an impact on the business model in the future.	0,50
	Indicator is strongly pronounced						
5	Indicator is given	**x**	Source Category	**3**	European Parliament; European Council (2006): REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02006R1907-20221217		0,75
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

C 20	Manufacture of Chemicals and chemical Products					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,50	1,00	0,50	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,00	1,50	0,00	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							1,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	2	United Nations Environment Programme (2022): Georgia: enhancing regulation of hazardous chemicals and waste. https://www.unep.org/technical-highlight/georgia-enhancing-regulation-hazardous-chemicals-and-waste		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	United Nations Environment Programme (without date): About Green and Sustainable Chemistry. https://www.unep.org/explore-topics/chemicals-waste/what-we-do/green-and-sustainable-chemistry/about-green-and		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

C 20	Manufacture of Chemicals and chemical Products		**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?		**Score**	**Weight**	**Total**	
"No"	Are customers accepting/ demanding this very technology in other, export-relevant countries?	"No"				
		"Yes, the use can be recognised in its beginnings"		**1,00**	0,00	1
		"Yes, the use can be clearly recognised"		**1,00**		
		"Yes, the strong use can be clearly recognised"		**1,00**		
"Yes"	Perceived benefits in costs/maintenance from the user's perspective		0,00	2,00	0,00	2
	Perceived benefits in health from the user's perspective		0,75	1,00	0,75	3
	Perceived benefits in quality/durability from the user's perspective		0,00	1,00	0,00	4
	Perceived benefits to society and ecosystems		0,75	0,50	0,38	5
	Mass Media presence conveying a positive image		0,00	1,00	0,00	6
	VIP-Advocates		0,00	0,50	0,00	7
	Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			+/-	0,00	8
	Customer Behavior Risk Score at Sector-Level:				1,0	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	**x**	Source Category	**3**	Reihlen, A.; Bunke, D.; Gruhlke, A.; Groß-Hardt, R.; Blum, C. T. (2016): Guide on Sustainable Chemicals: A decision tool for substance manufacturers, formulators and end users of chemicals. Umweltbundesamt. https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/161221_uba_fb_chemikalien_engl_bf.pdf		0,75
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	**x**	Source Category	**3**	Reihlen, A.; Bunke, D.; Gruhlke, A.; Groß-Hardt, R.; Blum, C. T. (2016): Guide on Sustainable Chemicals: A decision tool for substance manufacturers, formulators and end users of chemicals. Umweltbundesamt. https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/161221_uba_fb_chemikalien_engl_bf.pdf		0,75
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

C 29 Manufacture of Motor Vehicles, Trailers and semi-Trailers

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
C 29	**Manufacture of Motor Vehicles, Trailers and semi-Trailers**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		2,0		1,8	1
		Chronic		1,5			2
	Transition Climate Risk	GHG-Emission Contribution		2,0		2,38	3
		Transitional Intensity	Probability of regulatory Change	3,5	2,8		4
			Economic Impact of regulatory Change	2,5			5
			Technological Change	3,0			6
			Customer Behavior	2,0			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0,5	2,5	8
		Other Environmental Risks		Add-on Factor	0,75		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,75		11
	ESG-Risk Score at Sector-Level:					7	6,63

Σ

Ref.	**Explanation of the Assessment**	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Human Rights Watch (2021): Aluminum: The Car Industry’s Blind Spot. https://www.hrw.org/report/2021/07/22/aluminum-car-industrys-blind-spot/why-car-companies-should-address-human-rights	0,5
9	Williams, I. D.; Blyth, M. (2023): Autogeddon or autoheaven: Environmental and social effects of the automotive industry from launch to present. Science of The Total Environment. Vol. 858. https://doi.org/10.1016/j.scitotenv.2022.159987	0,8
10	Business and Human Rights Resource Center (2018): Business & human rights snapshot: Automotive sector. https://media.business-humanrights.org/media/documents/files/BHRRC_AutomotiveSector_OCT2018.pdf	0,5
11	Williams, I. D.; Blyth, M. (2023): Autogeddon or autoheaven: Environmental and social effects of the automotive industry from launch to present. Science of The Total Environment. Vol. 858. https://doi.org/10.1016/j.scitotenv.2022.159987	0,8

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

C 29	Manufacture of Motor Vehicles, Trailers and semi-Trailers					Scoring			Reference
	Are acute climate events in the country/region already relevant for the sector under consideration?					Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		1,00	0,00	1
					"Yes, very likely"		1,00		
	"Yes"	X	Observed loss of assets/property			0,00	1,00	0,00	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,50	1,00	0,50	4
			1-3 expected to increase in the future			0,50	1,00	0,50	5
			Lack of adaptability of the business model			0,00	1,00	0,00	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			0,50	1,00	0,50	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
							Acute Climate Risk Score at Sector-Level:	2,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Nakano, K. (2021): Risk assessment for adaptation to climate change in the international supply chain. Journal of Cleaner Production. Vol. 319. https://doi.org/10.1016/j.jclepro.2021.128785	The source refers to events that affect suppliers and thus have an impact on the company.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Nakano, K. (2021): Risk assessment for adaptation to climate change in the international supply chain. Journal of Cleaner Production. Vol. 319. https://doi.org/10.1016/j.jclepro.2021.128785	The source refers to events that affect suppliers and thus have an impact on the company.	0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Nakano, K. (2021): Risk assessment for adaptation to climate change in the international supply chain. Journal of Cleaner Production. Vol. 319. https://doi.org/10.1016/j.jclepro.2021.128785	The source refers to events that affect suppliers and thus have an impact on the company.	0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks	*See H Transportation and Storage*					0,50
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
C 29	Manufacture of Motor Vehicles, Trailers and semi-Trailers					**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		**1,00**	0,00	1
					"Yes, very likely"		**1,00**		
	"Yes"	**x**	Observed loss of assets/property			0,00	1,00	0,00	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,50	1,00	0,50	4
			1-3 expected to increase in the future			0,00	1,00	0,00	5
			Lack of adaptability of the business model			0,00	1,00	0,00	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)			0,50	1,00	0,50	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Chronic Climate Risk Score at Sector-Level:							1,5	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Yes						
	Yes, very likely						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	**x**	Source Category	**2**	Thomson, E. (2023): Droughts are creating new supply chain problems. This is what you need to know. https://www.weforum.org/agenda/2023/10/drought-trade-rivers-supply-chain/ Ramírez, A. (2022): The automotive industry’s complex supply chain interconnectivity. https://europartnersgroup.com/global-motion/supply-chain-automotive-industry-interconnectivity/	Drought is a major problem for transportation within the supply chain. As the automotive sector has a complex supply chain structure, it is affected as well.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**2**	Thomson, E. (2023): Droughts are creating new supply chain problems. This is what you need to know. https://www.weforum.org/agenda/2023/10/drought-trade-rivers-supply-chain/ Ramírez, A. (2022): The automotive industry’s complex supply chain interconnectivity. https://europartnersgroup.com/global-motion/supply-chain-automotive-industry-interconnectivity/	Drought is a major problem for transportation within the supply chain. As the automotive sector has a complex supply chain structure, it is affected as well.	0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks	*See H Transportation and Storage*					0,50
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector				Scoring		Reference
C 29	Manufacture of Motor Vehicles, Trailers and semi-Trailers						
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				Percentage-Range	Total	
	X ≥ 10%						
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%				X	1,50	
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"		Add-on Factor 1			
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"	X	Add-on Factor 0.5		0,50	
	GHG-Emission Contribution Score at Sector-Level:					2,0	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.	The greenhouse gas emissions stated in the source for this sector (score 1) are considered to be too low. Values from other countries have a score of 1.5, which is awarded here.	1,50
2			0,00
3	*See H Transportation and Storage*		0,50

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector								
C 29	Manufacture of Motor Vehicles, Trailers and semi-Trailers					Scoring			Reference
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					Score	Weight	Total	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		1,00	0,00	1
					"Yes, it is established"		1,00		
					"Yes, it is established and a further extention is planned"		1,00		
	"Yes"	X	Announced in the country under consideration			0,75	1,00	0,75	2
			Established in the country under consideration			0,75	2,00	1,50	3
			Further extension of this very regulation announced			0,00	0,50	0,00	4
			Announced in other relevant countries			0,75	0,50	0,38	5
			Established in other relevant countries			0,75	1,00	0,75	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:							3,5	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123		0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	The EU Association Agreement commits Georgia to a comprehensive reform agenda, including EU legislation to which national legislation must be aligned. Directive 2009/40/EC of the European Parliament and of the Council of May 6, 2009 on roadworthiness tests for motor vehicles and their trailers requires regular vehicle inspections, including verification of the proper	0,75
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	2	European Parliament (2022): Deal confirms zero-emissions target for new cars and vans in 2035. https://www.europarl.europa.eu/news/en/press-room/20221024IPR45734/deal-confirms-zero-emissions-target-for-new-cars-and-vans-in-2035		0,75
	Indicator is strongly pronounced	x					
6	Indicator is given	x	Source Category	3	European Commission (2023): REGULATION (EU) 2019/631 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02019R0631-20230905 Bundestag (2021): Act on Corporate Due Diligence Obligations in Supply Chains. https://www.csr-in-deutschland.de/SharedDocs/Downloads/EN/act-corporate-due-diligence-obligations-supply-	Regarding Source 2: The automotive industry has a very complex value chain, it can be assumed that the German Supply Chain Due Diligence Act is relevant.	0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
C 29	Manufacture of Motor Vehicles, Trailers and semi-Trailers					**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				1
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
			Strong effect on the business model			0,00	1,00	0,00	3
			1-2 expected to increase in the future			0,00	0,50	0,00	4
			1 or 2 obvious in other relevant countries			0,75	1,00	0,75	5
			Impact on the value chain			0,50	0,50	0,25	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							2,5	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	**x**	Source Category	**3**	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	The EU Association Agreement commits Georgia to a comprehensive reform agenda, including EU legislation to which national legislation must be aligned. Directive 2009/40/EC of the European Parliament and of the Council of May 6, 2009 on roadworthiness tests for motor vehicles and their trailers requires regular vehicle inspections, including verification of the proper functioning of emission control	0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	**x**	Source Category	**3**	European Commission (2023): REGULATION (EU) 2019/631 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011 https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02019R0631-20230905		0,75
	Indicator is strongly pronounced						
6	Indicator is given	**x**	Source Category	**2**	Pineda, R. (2016): Making the climate change issue “real” for managers. Journal of Global Responsibility. Vol. 7. Issue 1. pp. 84-97. https://www.emerald.com/insight/content/doi/10.1108/JGR-12-2015-0022/full/html	The source describes automotive manufacturing as dependent on suppliers of steel, aluminum, glass, rubber and plastics, which are likely to be heavily affected by emissions regulations.	0,50
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					Score	Weight	Total	Reference
C 29	Manufacture of Motor Vehicles, Trailers and semi-Trailers					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,50	1,00	0,50	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			1,00	0,50	0,50	4
			Heavy use in other relevant countries			1,00	1,00	1,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,75	1,50	1,13	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							**3,0**	Max. 4

Σ

Reference							**Score**
1	No		Source Category				**0,00**
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	**2**	Ministry of Economy and Sustainable Development of Georgia (2023): Transport Policy & Electric Mobility; https://www.unescap.org/sites/default/d8files/event-documents/Georgia_0.pdf Lui, S.; Posada, E. (2022): Landscape for mitigation and finance in Georgia's urban mobility sector. https://newclimate.org/sites/default/files/2022-04/newclimate_landscape_for_urbanmobility_georgia_final_report.pdf	The market share of electric mobility i low in Georgia (below 1%). However, various forms of mobility (e.g. train) can be seen as a sustainability-related alternative to the car.	0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category	**3**	European Environment Agency (2023): New registrations of electric vehicles in Europe; https://www.eea.europa.eu/en/analysis/indicators/new-registrations-of-electric-vehicles Janic, M. (2006): Sustainable transport in the European Union: A review of the past research and future ideas. Transport Reviews. Vol. 26. Issue 1. pp. 81-104. https://doi.org/10.1080/01441640500178908	According to the first source, the number of newly registered battery electric vehicles increased by 25%.	1,00
	Indicator is strongly pronounced	x					
5	Indicator is given		Source Category	**3**	European Environment Agency (2023): New registrations of electric vehicles in Europe; https://www.eea.europa.eu/en/analysis/indicators/new-registrations-of-electric-vehicles	According to the source, the number of newly registered battery electric vehicles increased by 25%.	1,00
	Indicator is strongly pronounced	x					
6	Indicator is given	x	Source Category	**3**	German Federal Ministry for the Environment (2023): Efficiency and costs: is it worth running an electric car? https://www.bmuv.de/themen/verkehr/elektromobilitaet/effizienz-und-kosten	According to the source the economic benefit is obvious, it is just the high costs of the initial investment that reduce this effect yet.	0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								Reference
C 29	Manufacture of Motor Vehicles, Trailers and semi-Trailers					**Scoring**			
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"			0,00	1
					"Yes, the use can be recognised in its beginnings"		**1,00**		
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,75	2,00	1,50	2
			Perceived benefits in health from the user's perspective			0,50	1,00	0,50	3
			Perceived benefits in quality/durability from the user's perspective			0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems			0,50	0,50	0,25	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			-0,50	+/-	-0,50	8
	Customer Behavior Risk Score at Sector-Level:							2,0	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Beginning						
	Use						
	Heavy use						
2	Indicator is given	**x**	Source Category	**3**	German Federal Ministry for the Environment (2023): Efficiency and costs: is it worth running an electric car? https://www.bmuv.de/themen/verkehr/elektromobilitaet/effizienz-und-kosten	According to the source the economic benefit is obvious, it is just the high costs of the initial investment that reduce this effect yet.	0,75
	Indicator is strongly pronounced						
3	Indicator is given	**x**	Source Category	**2**	Litman, T.; Brenman, M. (2012): A new social equity agenda for sustainable transportation. Victoria Transport Policy Institute. https://core.ac.uk/download/pdf/30678565.pdf		0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	**x**	Source Category	**2**	Litman, T.; Brenman, M. (2012): A new social equity agenda for sustainable transportation. Victoria Transport Policy Institute. https://core.ac.uk/download/pdf/30678565.pdf		0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary	As the charging-infrastructure in Georgia outside of Tiblisi and Bitumi is very limited, the growth of electric mobility is expected to be slower then in other countries.			-0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

D Electricity, Gas, Steam and Air Conditioning Supply

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
D	**Electricity, Gas, Steam and Air Conditioning Supply**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		3,0		3,0	1
		Chronic		3,0			2
	Transition Climate Risk	GHG-Emission Contribution		4,0		3,44	3
		Transitional Intensity	Probability of regulatory Change	3,5	2,9		4
			Economic Impact of regulatory Change	2,5			5
			Technological Change	3,0			6
			Customer Behavior	2,5			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0,75	2,5	8
		Other Environmental Risks		Add-on Factor	0,75		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
	ESG-Risk Score at Sector-Level:					9	8,94

Σ

Ref.	**Explanation of the Assessment**	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG).Holland, R. A.; Scott, K.; Agnolucci, P.; Rapti, C.; Eigenbrod, F.; Taylor, G. (2019): The influence of the global electric power system on terrestrial biodiversity. Proceedings of the National Academy of Sciences. 116(51). pp. 26078-26084. https://www.pnas.org/doi/abs/10.1073/pnas.1909269116	0,8
9	European Environment Agency (without date): Environmental impact of energy. https://www.eea.europa.eu/help/glossary/eea-glossary/environmental-impact-of-energy	0,75
10	Germanwatch; Misereor (2017): The Global Energy Sector and Human Rights – Putting German Business and Policy to the Test. https://www.germanwatch.org/sites/default/files/publication/20708.pdf	0,5
11	Waldraff, A. (2022): Promoting land-use management and more sustainable energy production in the South Caucasus. https://www.giz.de/en/worldwide/76256.html	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

D	Electricity, Gas, Steam and Air Conditioning Supply					Scoring			Reference
	Are acute climate events in the country/region already relevant for the sector under consideration?					Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		1,00	0,00	1
					"Yes, very likely"		1,00		
	"Yes"	X	Observed loss of assets/property			0,50	1,00	0,50	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,50	1,00	0,50	4
			1-3 expected to increase in the future			0,50	1,00	0,50	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)				1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,50	+/-	0,50	8
	Acute Climate Risk Score at Sector-Level:							3,0	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Kaunda, C. S.; Kimambo, C. Z.; Nielsen, T. K. (2012): Hydropower in the context of sustainable energy supply: a review of technologies and challenges. International Scholarly Research Notices. https://downloads.hindawi.com/archive/2012/730631.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Kaunda, C. S.; Kimambo, C. Z.; Nielsen, T. K. (2012): Hydropower in the context of sustainable energy supply: a review of technologies and challenges. International Scholarly Research Notices. https://downloads.hindawi.com/archive/2012/730631.pdf Ebinger, J. O.; Vergara, W. (2011): Climate impacts on energy systems: key issues for energy sector adaptation. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=6sAEBwzvBrMC&oi=fnd&pg=PR3&dq=mexico+climate+risk+energy+sector&ots=qH		0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Kaunda, C. S.; Kimambo, C. Z.; Nielsen, T. K. (2012): Hydropower in the context of sustainable energy supply: a review of technologies and challenges. International Scholarly Research Notices. https://downloads.hindawi.com/archive/2012/730631.pdf Ebinger, J. O.; Vergara, W. (2011): Climate impacts on energy systems: key issues for energy sector adaptation. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=6sAEBwzvBrMC&oi=fnd&pg=PR3&dq=mexico+climate+risk+energy+sector&ots=qH		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Birol, F. (2021): 7 steps to make electricity systems more resilient to climate risks. https://www.weforum.org/agenda/2021/07/climate-change-electricity-energy-security-extreme-weather/		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Ebinger, J. O.; Vergara, W. (2011): Climate impacts on energy systems: key issues for energy sector adaptation. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=6sAEBwzvBrMC&oi=fnd&pg=PR3&dq=mexico+climate+risk+energy+sector&ots=qHxxz-XgeF&sig=NJh8-2mQwQm5kTTp08iHPbj8c-s#v=onepage&q&f=false	The source points out that some effects are hard to avoid. Consequently, adaptation measures must be taken to minimize the impacts.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
D	Electricity, Gas, Steam and Air Conditioning Supply					**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		**1,00**	0,00	1
					"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property			0,50	1,00	0,50	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,50	1,00	0,50	4
			1-3 expected to increase in the future			0,50	1,00	0,50	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)				1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,50	+/-	0,50	8
	Chronic Climate Risk Score at Sector-Level:							**3,0**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Ebinger, J. O.; Vergara, W. (2011): Climate impacts on energy systems: key issues for energy sector adaptation. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=6sAEBwzvBrMC&oi=fnd&pg=PR3&dq=mexico+climate+risk+energy+sector&ots=qHxxz-XgeF&sig=NJh8-2mQwQm5kTTp08iHPbj8c-s#v=onepage&q&f=false		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Ebinger, J. O.; Vergara, W. (2011): Climate impacts on energy systems: key issues for energy sector adaptation. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=6sAEBwzvBrMC&oi=fnd&pg=PR3&dq=mexico+climate+risk+energy+sector&ots=qHxxz-XgeF&sig=NJh8-2mQwQm5kTTp08iHPbj8c-s#v=onepage&q=hydropower&f=false		0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Ebinger, J. O.; Vergara, W. (2011): Climate impacts on energy systems: key issues for energy sector adaptation. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=6sAEBwzvBrMC&oi=fnd&pg=PR3&dq=mexico+climate+risk+energy+sector&ots=qHxxz-XgeF&sig=NJh8-2mQwQm5kTTp08iHPbj8c-s#v=onepage&q=hydropower&f=false		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Birol, F. (2021): 7 steps to make electricity systems more resilient to climate risks. https://www.weforum.org/agenda/2021/07/climate-change-electricity-energy-security-extreme-weather/	Even though the source often mentions extreme weather events, it can also be used as an indicator for chronic climate risks as it for instance mentions the rise in temperature or decrease in average precipitation.	0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Ebinger, J. O.; Vergara, W. (2011): Climate impacts on energy systems: key issues for energy sector adaptation. World Bank Publications. https://books.google.de/books?hl=de&lr=&id=6sAEBwzvBrMC&oi=fnd&pg=PR3&dq=mexico+climate+risk+energy+sector&ots=qHxxz-XgeF&sig=NJh8-2mQwQm5kTTp08iHPbj8c-s#v=onepage&q&f=false	The source points out that some effects are hard to avoid. Consequently, adaptation measures must be taken to minimize the impacts.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector				Scoring		Reference
D	Electricity, Gas, Steam and Air Conditioning Supply						
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				Percentage-Range	Total	
	X ≥ 10%						
	10% > X ≥ 7.5%				X	3,50	
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%						
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"	X	Add-on Factor 1		1,00	
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					4,0	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		3,50
2	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia	The construction of large dams for hydroelectric power plants is listed as one of the reasons for deforestation in Georgia.	1,00
3			0,00

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
D	Electricity, Gas, Steam and Air Conditioning Supply					**Scoring**			**Reference**
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					**Score**	**Weight**	**Total**	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		**1,00**	0,00	1
					"Yes, it is established"		**1,00**		
					"Yes, it is established and a further extention is planned"		**1,00**		
	"Yes"	**X**	Announced in the country under consideration			0,75	1,00	0,75	2
			Established in the country under consideration			0,75	2,00	1,50	3
			Further extension of this very regulation announced			0,00	0,50	0,00	4
			Announced in other relevant countries			0,50	0,50	0,25	5
			Established in other relevant countries			0,75	1,00	0,75	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:							3,5	Max. 4
								Σ	

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123		0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	3	President of Georgia S. Zourabichvili (2019): The Law of Georgia On Promotion of Production and Utilization of Energy from Renewable Sources. https://ppp.gov.ge/app/uploads/2022/07/law-on-ON-PROMOTING-THE-GENERATION-AND-CONSUMPTION-OF-ENERGY-FROM-RENEWABLE-SOURCES.pdf		0,75
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Bordoff, J. (2022): AMERICA'S LANDMARK CLIMATE LAW. https://www.imf.org/en/Publications/fandd/issues/2022/12/america-landmark-climate-law-bordoff		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) (2019): Federal Climate Change Act (Bundes-Klimaschutzgesetz). https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Gesetze/ksg_final_en_bf.pdf		0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category	2	United Nations Development Programme (2021): Georgians see climate change as a top-three challenge for humanity. https://www.undp.org/georgia/press-releases/georgians-see-climate-change-top-three-challenge-humanity	Indicator is NOT given: According to a survey, Georgians know what climate change is and the vast majority see it as a direct and immediate threat, but only a few are taking action	0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
D	Electricity, Gas, Steam and Air Conditioning Supply					**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
			Strong effect on the business model			0,00	1,00	0,00	3
			1-2 expected to increase in the future			0,00	0,50	0,00	4
			1 or 2 obvious in other relevant countries			0,75	1,00	0,75	5
			Impact on the value chain			0,00	0,50	0,00	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							**2,5**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	x	Source Category	3	President of Georgia S. Zourabichvili (2019): The Law of Georgia On Promotion of Production and Utilization of Energy from Renewable Sources. https://ppp.gov.ge/app/uploads/2022/07/law-on-ON-PROMOTING-THE-GENERATION-AND-CONSUMPTION-OF-ENERGY-FROM-RENEWABLE-SOURCES.pdf		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	3	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) (2019): Federal Climate Change Act (Bundes-Klimaschutzgesetz). https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Gesetze/ksg_final_en_bf.pdf		0,75
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					Scoring			**Reference**
D	Electricity, Gas, Steam and Air Conditioning Supply								
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,75	1,00	0,75	2
			Heavy use in the country under consideration			0,75	1,00	0,75	3
			Use in other relevant countries			0,75	0,50	0,38	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,75	1,50	1,13	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							3,0	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	In 2018, renewable energies accounted for 83% of electricity generation in Georgia.	0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123	In 2018, renewable energies accounted for 83% of electricity generation in Georgia.	0,75
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	3	Osmani, A.; Zhang, J.; Gonela, V.; Awudu, I. (2013): Electricity generation from renewables in the United States: Resource potential, current usage, technical status, challenges, strategies, policies, and future directions. Renewable and Sustainable Energy Reviews. Vol. 24. pp. 454-472. https://doi.org/10.1016/j.rser.2013.03.011		0,75
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category	2	Wood, J. (2021): Renewable energy is cheaper than previously thought, says a new report - and could be a gamechanger in the climate change battle. https://www.weforum.org/agenda/2021/10/how-cheap-can-renewable-energy-get/		0,75
	Indicator is strongly pronounced	x					
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector							
D	Electricity, Gas, Steam and Air Conditioning Supply				**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?				**Score**	**Weight**	**Total**	
"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"				
				"Yes, the use can be recognised in its beginnings"		**1,00**	0,00	1
				"Yes, the use can be clearly recognised"		**1,00**		
				"Yes, the strong use can be clearly recognised"		**1,00**		
"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,75	2,00	1,50	2
		Perceived benefits in health from the user's perspective			0,75	1,00	0,75	3
		Perceived benefits in quality/durability from the user's perspective			0,50	1,00	0,50	4
		Perceived benefits to society and ecosystems			0,50	0,50	0,25	5
		Mass Media presence conveying a positive image			0,00	1,00	0,00	6
		VIP-Advocates			0,00	0,50	0,00	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			-0,50	+/-	-0,50	8
	Customer Behavior Risk Score at Sector-Level:						2,5	Max. 4
							Σ	

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category	2	Wood, J. (2021): Renewable energy is cheaper than previously thought, says a new report - and could be a gamechanger in the climate change battle. https://www.weforum.org/agenda/2021/10/how-cheap-can-renewable-energy-get/		0,75
	Indicator is strongly pronounced	x					
3	Indicator is given	x	Source Category	3	Ram, M.; Child, M.; Aghahosseini, A.; Bogdanov, D.; Lohrmann, A.; Breyer, C. (2018): A comparative analysis of electricity generation costs from renewable, fossil fuel and nuclear sources in G20 countries for the period 2015-2030. Journal of cleaner production. 199. pp. 687-704. https://www.sciencedirect.com/science/article/abs/pii/S0959652618321486		0,75
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Kåberger, T. (2018): Progress of renewable electricity replacing fossil fuels. Global Energy Interconnection. Vol. 1. Issue 1. pp. 48-52. https://www.sciencedirect.com/science/article/pii/S2096511718300069		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Kåberger, T. (2018): Progress of renewable electricity replacing fossil fuels. Global Energy Interconnection. Vol. 1. Issue 1. pp. 48-52. https://www.sciencedirect.com/science/article/pii/S2096511718300069		0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary	According to a survey, Georgians know what climate change is and the vast majority see it as a direct and immediate threat, but only a few are taking action			-0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

E Water Supply, Sewerage, Waste Management and Remediation Activities

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

E	Water Supply, Sewerage, Waste Management and Remediation Activities			Scoring			Reference
	Physical Climate Risk	Acute		2,0		2,5	1
		Chronic		3,0			2
	Transition Climate Risk	GHG-Emission Contribution		2,5		2,44	3
		Transitional Intensity	Probability of regulatory Change	3,5	2,4		4
			Economic Impact of regulatory Change	2,5			5
			Technological Change	1,5			6
			Customer Behavior	2,0			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0,5	2,3	8
		Other Environmental Risks		Add-on Factor	0,75		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,5		11
					ESG-Risk Score at Sector-Level:	7	7,19

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Wear, S. L.; Acuña, V.; McDonald, R.; Font, C. (2021): Sewage pollution, declining ecosystem health, and cross-sector collaboration. Biological Conservation. https://doi.org/10.1016/j.biocon.2021.109010	0,5
9	Wear, S. L.; Acuña, V.; McDonald, R.; Font, C. (2021): Sewage pollution, declining ecosystem health, and cross-sector collaboration. Biological Conservation. https://doi.org/10.1016/j.biocon.2021.109010 Shavadze, N. (2021): Life on Georgia's largest toxic landfill.	0,75
10	Shavadze, N. (2021): Life on Georgia's largest toxic landfill. https://www.dw.com/en/living-and-working-on-georgias-largest-garbage-dump/a-59570389	0,5
11	Shavadze, N. (2021): Life on Georgia's largest toxic landfill. https://www.dw.com/en/living-and-working-on-georgias-largest-garbage-dump/a-59570389	0,5

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

E	Water Supply, Sewerage, Waste Management and Remediation Activities					**Scoring**			**Reference**
	Are acute climate events in the country/region already relevant for the sector under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		**1,00**	0,00	1
					"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property			0,50	1,00	0,50	2
			Expected impact on revenue			0,00	1,00	0,00	3
			Expected impact on costs			0,50	1,00	0,50	4
			1-3 expected to increase in the future			0,00	1,00	0,00	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,50	+/-	0,50	8
	Acute Climate Risk Score at Sector-Level:							2,0	Max. 4
								Σ	

Reference							**Score**
1	No		Source Category				**0,00**
	Yes						
	Yes, very likely						
2	Indicator is given	**x**	Source Category	**2**	Peterson, C. (2013): Assessment of solid waste management practices and its vulnerability to climate risks in Maldives Tourism Sector. Report submitted to Ministry of Tourism, Arts and Culture. https://archive.tourism.gov.mv/downloads/tap/2014/Solid_Waste.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**2**	Koop, S. H.; van Leeuwen, C. J. (2017): The challenges of water, waste and climate change in cities. Environment, development and sustainability. 19(2). pp. 385-418. https://link.springer.com/article/10.1007/s10668-016-9760-4?fbclid=IwAR1UGFYdLE_puAItEego6SxmaK5zm-jMz1ZpkThV9i_ybMYsBC5qCJTWzII		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	**x**	Source Category	**2**	Koop, S. H.; van Leeuwen, C. J. (2017): The challenges of water, waste and climate change in cities. Environment, development and sustainability. 19(2). pp. 385-418. https://link.springer.com/article/10.1007/s10668-016-9760-4?fbclid=IwAR1UGFYdLE_puAItEego6SxmaK5zm-jMz1ZpkThV9i_ybMYsBC5qCJTWzII	The source addresses adaptation, pointing out that it is often ineffective and associated with high costs.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector							
E	Water Supply, Sewerage, Waste Management and Remediation Activities				**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?				**Score**	**Weight**	**Total**	
"No"		Is it likely that this relevance will be given in the future?		"No"				
				"Yes"		**1,00**	0,00	1
				"Yes, very likely"		**1,00**		
"Yes"	**x**	Observed loss of assets/property			0,50	1,00	0,50	2
		Expected impact on revenue			0,00	1,00	0,00	3
		Expected impact on costs			0,50	1,00	0,50	4
		1-3 expected to increase in the future			0,75	1,00	0,75	5
		Lack of adaptability of the business model			0,50	1,00	0,50	6
		Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)			0,00	1,00	0,00	7
		Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,50	+/-	0,50	8
	Chronic Climate Risk Score at Sector-Level:						**3,0**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Peterson, C. (2013): Assessment of solid waste management practices and its vulnerability to climate risks in Maldives Tourism Sector. Report submitted to Ministry of Tourism, Arts and Culture. https://archive.tourism.gov.mv/downloads/tap/2014/Solid_Waste.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Koop, S. H.; van Leeuwen, C. J. (2017): The challenges of water, waste and climate change in cities. Environment, development and sustainability. 19(2). pp. 385-418. https://link.springer.com/article/10.1007/s10668-016-9760-4?fbclid=IwAR1UGFYdLE_puAItEego6SxmaK5zm-jMz1ZpkThV9i_ybMYsBC5qCJTWzII		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	3	IPCC (2021): Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Edited by: Masson-Delmotte, V.; Zhai, P.; Pirani, A.; Connors, S.L.; Péan, C.; Berger, S.; Caud, N.; Chen, Y.; Goldfarb, L.; Gomis, M. I.; Huang, M.; Leitzell, K.; Lonnoy, E.; Matthews, J. B. R.; Maycock, T. K.; Waterfield, T.; Yelekçi, O.; Yu, R.; Zhou, B.. Cambridge University Press. doi:10.1017/9781009157896.		0,75
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Koop, S. H.; van Leeuwen, C. J. (2017): The challenges of water, waste and climate change in cities. Environment, development and sustainability. 19(2). pp. 385-418. https://link.springer.com/article/10.1007/s10668-016-9760-4?fbclid=IwAR1UGFYdLE_puAItEego6SxmaK5zm-jMz1ZpkThV9i_ybMYsBC5qCJTWzII	The source addresses adaptation, pointing out that it is often ineffective and associated with high costs.	0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

E	Water Supply, Sewerage, Waste Management and Remediation Activities				**Scoring**		**Reference**
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%						
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%				**X**	2,50	
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%						
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"		Add-on Factor 1			
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					2,5	Max. 4

Σ

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, Tbilisi.		2,50
2			0,00
3			0,00

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector					Scoring			Reference
E	Water Supply, Sewerage, Waste Management and Remediation Activities								
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					Score	Weight	Total	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		1,00	0,00	1
					"Yes, it is established"		1,00		
					"Yes, it is established and a further extention is planned"		1,00		
	"Yes"	X	Announced in the country under consideration			0,75	1,00	0,75	2
			Established in the country under consideration			0,75	2,00	1,50	3
			Further extension of this very regulation announced			0,75	0,50	0,38	4
			Announced in other relevant countries			0,00	0,50	0,00	5
			Established in other relevant countries			0,75	1,00	0,75	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Probability of regulatory Change Risk Score at Sector-Level:							3,5	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Law of Georgia on Water Resources Management (No. 3423-XIMS-XMP of 2023); https://www.fao.org/faolex/results/details/en/c/LEX-FAOC219653/ Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123		0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	3	The President of Georgia G. Margvelashvili (2014): Law of Georgia WASTE MANAGEMENT CODE. http://environment.cenn.org/app/uploads/2016/06/Waste-Management-Code_FINAL_2015.pdf		0,75
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	3	Law of Georgia on Water Resources Management (No. 3423-XIMS-XMP of 2023); https://www.fao.org/faolex/results/details/en/c/LEX-FAOC219653/		0,75
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) (2019): Federal Climate Change Act (Bundes-Klimaschutzgesetz). https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Gesetze/ksg_final_en_bf.pdf		0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
E	Water Supply, Sewerage, Waste Management and Remediation Activities					**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
			Strong effect on the business model			0,00	1,00	0,00	3
			1-2 expected to increase in the future			0,75	0,50	0,38	4
			1 or 2 obvious in other relevant countries			0,00	1,00	0,00	5
			Impact on the value chain			0,75	0,50	0,38	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							**2,5**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	x	Source Category	3	The President of Georgia G. Margvelashvili (2014): Law of Georgia WASTE MANAGEMENT CODE. http://environment.cenn.org/app/uploads/2016/06/Waste-Management-Code_FINAL_2015.pdf Law of Georgia on Water Resources Management (No. 3423-XIMS-XMP of 2023); https://www.fao.org/faolex/results/details/en/c/LEX-FAOC219653/		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	3	Law of Georgia on Water Resources Management (No. 3423-XIMS-XMP of 2023); https://www.fao.org/faolex/results/details/en/c/LEX-FAOC219653/		0,75
	Indicator is strongly pronounced						
5	Indicator is given		Source Category	3	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) (2019): Federal Climate Change Act (Bundes-Klimaschutzgesetz). https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Gesetze/ksg_final_en_bf.pdf	Indicator is NOT given: Although mentioned, no clear effect on the business model can be derived.	0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	The President of Georgia G. Margvelashvili (2014): Law of Georgia WASTE MANAGEMENT CODE. http://environment.cenn.org/app/uploads/2016/06/Waste-Management-Code_FINAL_2015.pdf	Laws affecting this sector always have an impact on stakeholders in the value chain. For example, the source cited mentions banning or restricting the placing on the market of certain products.	0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
E	Water Supply, Sewerage, Waste Management and Remediation Activities					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,50	1,00	0,50	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,50	1,50	0,75	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							1,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	2	Georgia Water Planning (without date): Water. https://waterplanning.georgia.gov/water		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Farooq, M.; Cheng, J.; Khan, N. U.; Saufi, R. A.; Kanwal, N.; Bazkiaei, H. A. (2022): Sustainable Waste Management Companies with Innovative Smart Solutions: A Systematic Review and Conceptual Model. Sustainability 14(20). https://doi.org/10.3390/su142013146		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Cheuk, W.; Lo, K. V.; Branion, R. M.; Fraser, B. (2003): Benefits of sustainable waste management in the vegetable greenhouse industry. Journal of Environmental Science and Health, Part B. 38(6). pp. 855-863. https://doi.org/10.1081/PFC-120025565		0,50
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector							Reference
E	Water Supply, Sewerage, Waste Management and Remediation Activities				**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?				**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?	"No"				
				"Yes, the use can be recognised in its beginnings"		**1,00**	0,00	1
				"Yes, the use can be clearly recognised"		**1,00**		
				"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective		0,50	2,00	1,00	2
			Perceived benefits in health from the user's perspective		0,50	1,00	0,50	3
			Perceived benefits in quality/durability from the user's perspective		0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems		0,50	0,50	0,25	5
			Mass Media presence conveying a positive image		0,00	1,00	0,00	6
			VIP-Advocates		0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			+/-	0,00	8
	Customer Behavior Risk Score at Sector-Level:						2,0	Max. 4

Σ

Reference							Score
1	No		Source Category				**0,00**
	Beginning						
	Use						
	Heavy use						
2	Indicator is given	**x**	Source Category	**2**	Cheuk, W.; Lo, K. V.; Branion, R. M.; Fraser, B. (2003): Benefits of sustainable waste management in the vegetable greenhouse industry. Journal of Environmental Science and Health, Part B. 38(6). pp. 855-863. https://doi.org/10.1081/PFC-120025565		0,50
	Indicator is strongly pronounced						
3	Indicator is given	**x**	Source Category	**2**	Awasthi, A. K. et al. (2021): Zero waste approach towards a sustainable waste management. Resources, Environment and Sustainability. 3. https://doi.org/10.1016/j.resenv.2021.100014		0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	**x**	Source Category	**2**	Awasthi, A. K. et al. (2021): Zero waste approach towards a sustainable waste management. Resources, Environment and Sustainability. 3. https://doi.org/10.1016/j.resenv.2021.100014		0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

F Construction

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector							
F	**Construction**				**Scoring**			**Reference**
	Physical Climate Risk	Acute			1,5		1,5	1
		Chronic			1,5			2
	Transition Climate Risk	GHG-Emission Contribution			3,5		2,75	3
		Transitional Intensity	Probability of regulatory Change		2,5	2,0		4
			Economic Impact of regulatory Change		2,0			5
			Technological Change		1,5			6
			Customer Behavior		2,0			7
	Other ESG Risks	Loss of Biodiversity			Add-on Factor	0,75	2,8	8
		Other Environmental Risks			Add-on Factor	0,5		9
		Possible Human Rights Issues			Add-on Factor	0,75		10
		Other Social Risks			Add-on Factor	0,75		11
						ESG-Risk Score at Sector-Level:	7	7,00

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). Dobrowolska, K. (2021): How Does Construction Affect The Environment?. https://archdesk.com/blog/how-does-construction-affect-the-environment/	0,75
9	Dobrowolska, K. (2021): How Does Construction Affect The Environment?. https://archdesk.com/blog/how-does-construction-affect-the-environment/	0,5
10	Barnett, A. (2019): Construction sector shows 'lack of action' on tackling forced labour of workers globally, says NGO. https://www.business-humanrights.org/en/blog/construction-sector-shows-lack-of-action-on-tackling-forced-labour-of-workers-globally-says-ngo/ United States Department of State (2022): 2021 Country Reports on Human Rights Practices: Georgia.	0,75
11	Gurmu, A.; Shooshtarian, S.; Mahmood, M. N.; Hosseini, M. R.; Shreshta, A.; Martek, I. (2022): The state of play regarding the social sustainability of the construction industry: a systematic review. Journal of Housing and the Built Environment. 37(2). pp. 595-624. https://link.springer.com/article/10.1007/s10901-022-09941-5	0,75

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

F	Construction					Scoring			Reference
	Are acute climate events in the country/region already relevant for the sector under consideration?					Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		1,00	0,00	1
					"Yes, very likely"		1,00		
	"Yes"	X	Observed loss of assets/property			0,00	1,00	0,00	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,50	1,00	0,50	4
			1-3 expected to increase in the future			0,00	1,00	0,00	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Acute Climate Risk Score at Sector-Level:							1,5	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Hertin, J.; Berkhout, F.; Gann, D.; Barlow, J. (2003): Climate change and the UK house building sector: perceptions, impacts and adaptive capacity. Building Research & Information. 31(3-4). pp. 278-290. https://doi.org/10.1080/0961321032000097683	Extreme weather events can impact the construction period.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Hertin, J.; Berkhout, F.; Gann, D.; Barlow, J. (2003): Climate change and the UK house building sector: perceptions, impacts and adaptive capacity. Building Research & Information. 31(3-4). pp. 278-290. https://doi.org/10.1080/0961321032000097683	Machinery and tools are usually insured against occurring damage due to extreme weather events. However, as events become more frequent, the premium increases, resulting in higher costs.	0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Hertin, J.; Berkhout, F.; Gann, D.; Barlow, J. (2003): Climate change and the UK house building sector: perceptions, impacts and adaptive capacity. Building Research & Information. 31(3-4). pp. 278-290. https://doi.org/10.1080/0961321032000097683		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector					Scoring			Reference
F	Construction								
	Are chronic climate developments in the country/region already relevant for the sector under consideration?					Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?		"No"				
					"Yes"		1,00	0,00	1
					"Yes, very likely"		1,00		
	"Yes"	X	Observed loss of assets/property			0,00	1,00	0,00	2
			Expected impact on revenue			0,50	1,00	0,50	3
			Expected impact on costs			0,50	1,00	0,50	4
			1-3 expected to increase in the future			0,00	1,00	0,00	5
			Lack of adaptability of the business model			0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Chronic Climate Risk Score at Sector-Level:							1,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Hertin, J.; Berkhout, F.; Gann, D.; Barlow, J. (2003): Climate change and the UK house building sector: perceptions, impacts and adaptive capacity. Building Research & Information. 31(3-4). pp. 278-290. https://doi.org/10.1080/0961321032000097683	Seasonal changes may affect the construction period.	0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Hertin, J.; Berkhout, F.; Gann, D.; Barlow, J. (2003): Climate change and the UK house building sector: perceptions, impacts and adaptive capacity. Building Research & Information. 31(3-4). pp. 278-290. https://doi.org/10.1080/0961321032000097683	Higher maintenance costs may result.	0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Hertin, J.; Berkhout, F.; Gann, D.; Barlow, J. (2003): Climate change and the UK house building sector: perceptions, impacts and adaptive capacity. Building Research & Information. 31(3-4). pp. 278-290. https://doi.org/10.1080/0961321032000097683		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
F	Construction				**Scoring**		**Reference**
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%						
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%				**X**	2,00	
	0.5% > X ≥ 0.25%						
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"	**X**	Add-on Factor 1		1,00	
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"	**X**	Add-on Factor 0.25		0,25	
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					3,5	Max. 4

∑

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi. Ritchie, H.; Rosado, P.; Roser, M. (2020): Emissions by sector. https://ourworldindata.org/emissions-by-sector	The greenhouse gas emissions stated in the first source for this sector (score 1) are considered too low. According to Our World in Data, "Buildings" is the sector with the third highest GHG emissions in Georgia. Therefore, a score of plus 1 is awarded.	2,00
2	Patarkalashvili, T. (2019): Causes and Drivers of Deforestation and Forest Degradation in Georgia. Current Trends in Forest Research. https://www.gavinpublishers.com/article/view/causes-and-drivers-of-deforestation-and-forest-degradation-in-georgia United Nations (without date): Land - the planet's carbon sink. https://www.un.org/en/climatechange/science/climate-issues/land Allacker, K.; Souza, D. M. D.; Sala, S. (2014): Land use impact assessment in the construction sector: an analysis of LCIA models and case study application. The International Journal of Life Cycle Assessment. 19. pp. 1799-1809. https://link.springer.com/article/10.1007/s11367-014-0781-7		1,00
3	*See e.g. C23 Manufacture of other non-metallic mineral Products*		0,25

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE Sector

F	Construction					Scoring			Reference
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					Score	Weight	Total	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		1,00	0,00	1
					"Yes, it is established"		1,00		
					"Yes, it is established and a further extention is planned"		1,00		
	"Yes"	X	Announced in the country under consideration			0,75	1,00	0,75	2
			Established in the country under consideration			0,00	2,00	0,00	3
			Further extension of this very regulation announced			0,75	0,50	0,38	4
			Announced in other relevant countries			0,25	0,50	0,13	5
			Established in other relevant countries			0,75	1,00	0,75	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,50	+/-	0,50	8
	Probability of regulatory Change Risk Score at Sector-Level:							2,5	Max. 4

Σ

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category	1	Westminster Foundation for Democracy (2022): Georgia launches work on climate change law. https://www.wfd.org/press-releases/georgia-launches-work-climate-change-law	Indicator is NOT given: To date there is nolaw that regulates important issues related to climate change. As can be seen from the quoted source, this is currently being prepared.	0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	3	Government of Georgia (2021): LAW OF GEORGIA ON ENERGY EFFICIENCY OF BUILDINGS. https://www.matsne.gov.ge/en/document/view/4873932?impose=parallelEn&fullscreen=1&publication=0		0,75
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	1	World Green Building Council (2022): Construction leaders from across Europe launch EU Policy Roadmap towards climate neutral buildings and construction by 2050. https://worldgbc.org/article/construction-leaders-from-across-europe-launch-eu-policy-roadmap-towards-climate-neutral-buildings-and-construction-by-2050/		0,25
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) (2019): Federal Climate Change Act (Bundes-Klimaschutzgesetz). https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Gesetze/ksg_final_en_bf.pdf		0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
F	Construction					**Scoring**			**Reference**
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					**Score**	**Weight**	**Total**	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		**1,00**	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		**1,00**		
					"Yes, score > 1.5 and a high ESG impact is perceived"		**1,00**		
	"Yes"	**X**	Effect on the business model			0,75	2,00	1,50	2
			Strong effect on the business model				1,00	0,00	3
			1-2 expected to increase in the future			0,75	0,50	0,38	4
			1 or 2 obvious in other relevant countries				1,00	0,00	5
			Impact on the value chain				0,50	0,00	6
			Lack of adaptability of the business model				1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Impact of regulatory Change Risk Score at Sector-Level:							2,0	Max. 4
								Σ	

Reference							Score
1	No		Source Category			This assessment is based on the assumption that the construction sector will be regulated if a climate law is introduced.	**0,00**
	Yes, probable	**x**					
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	**x**	Source Category	**3**	Government of Georgia (2021): LAW OF GEORGIA ON ENERGY EFFICIENCY OF BUILDINGS. https://www.matsne.gov.ge/en/document/view/4873932?impose=parallelEn&fullscreen=1&publication=0		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	**x**	Source Category	**3**	Government of Georgia (2021): LAW OF GEORGIA ON ENERGY EFFICIENCY OF BUILDINGS. https://www.matsne.gov.ge/en/document/view/4873932?impose=parallelEn&fullscreen=1&publication=0		0,75
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
F	Construction					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,00	1,00	0,00	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,50	1,50	0,75	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,50	+/-	0,50	8
	Technological Change Risk Score at Sector-Level:							1,5	Max. 4
								Σ	

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Ahn, Y. H.; Pearce, A. R.; Wang, Y.; Wang, G. (2013): Drivers and barriers of sustainable design and construction: The perception of green building experience. International Journal of Sustainable Building Technology and Urban Development. Vol. 4. Issue 1. pp.35-45. https://doi.org/10.1080/2093761X.2012.759887		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Häkkinen, T.; Belloni, K. (2011): Barriers and drivers for sustainable building. Building Research & Information. Vol. 39. Issue 3. pp. 239-255. https://doi.org/10.1080/09613218.2011.561948	The source refers to lower operational costs.	0,50
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
F	Construction					**Scoring**			**Reference**
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"				1
					"Yes, the use can be recognised in its beginnings"		**1,00**	0,00	
					"Yes, the use can be clearly recognised"		**1,00**		
					"Yes, the strong use can be clearly recognised"		**1,00**		
	"Yes"	**X**	Perceived benefits in costs/maintenance from the user's perspective			0,50	2,00	1,00	2
			Perceived benefits in health from the user's perspective			0,50	1,00	0,50	3
			Perceived benefits in quality/durability from the user's perspective			0,50	1,00	0,50	4
			Perceived benefits to society and ecosystems			0,50	0,50	0,25	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			-0,50	+/-	-0,50	8
	Customer Behavior Risk Score at Sector-Level:							**2,0**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	2	Häkkinen, T.; Belloni, K. (2011): Barriers and drivers for sustainable building. Building Research & Information. Vol. 39. Issue 3. pp. 239-255. https://doi.org/10.1080/09613218.2011.561948	The source refers to lower operational costs.	0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Akadiri, P. O.; Chinyio, E. A.; Olomolaiye, P. O. (2012): Design of a sustainable building: A conceptual framework for implementing sustainability in the building sector. Buildings. Vol. 2. Issue 2. pp. 126-152. https://doi.org/10.3390/buildings2020126		0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Akadiri, P. O.; Chinyio, E. A.; Olomolaiye, P. O. (2012): Design of a sustainable building: A conceptual framework for implementing sustainability in the building sector. Buildings. Vol. 2. Issue 2. pp. 126-152. https://doi.org/10.3390/buildings2020126		0,50
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Häkkinen, T.; Belloni, K. (2011): Barriers and drivers for sustainable building. Building Research & Information. 39(3). pp. 239-255. https://doi.org/10.1080/09613218.2011.561948		0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary	Despite the benefits outlined, an Attitude-Behaviour Gap is evident.			-0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

H Transportation and Storage

Risk Radar

Assessment of ESG-Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
H	**Transportation and Storage**			**Scoring**			**Reference**
	Physical Climate Risk	Acute		3,0		3,0	1
		Chronic		3,0			2
	Transition Climate Risk	GHG-Emission Contribution		4,0		2,81	3
		Transitional Intensity	Probability of regulatory Change	2,5	1,6		4
			Economic Impact of regulatory Change	1,5			5
			Technological Change	1,0			6
			Customer Behavior	1,5			7
	Other ESG Risks	Loss of Biodiversity		Add-on Factor	0,75	2,8	8
		Other Environmental Risks		Add-on Factor	0,75		9
		Possible Human Rights Issues		Add-on Factor	0,5		10
		Other Social Risks		Add-on Factor	0,75		11
				ESG-Risk Score at Sector-Level:		9	8,56

Σ

Ref.	Explanation of the Assessment	Score
1	*Please refer to the corresponding sub-scoring tables*	
2		
3		
4		
5		
6		
7		
8	Nikuradze, E. & Tvalodze, S. (2023): Biodiversity-related Financial Risks – why it matters and how we can measure them? NBG Working Papers, Tbilisi, Georgia: National Bank of Georgia (NBG). United Nations (2021): Sustainable transport, sustainable development. Interagency report for second Global Sustainable Transport Conference. https://sdgs.un.org/sites/default/files/2021-10/Transportation%20Report%202021_FullReport_Digital.pdf	0,75
9	Fuglestvedt, J.; Berntsen, T.; Myhre, G.; Rypdal, K.; Skeie, R. B. (2008): Climate forcing from the transport sectors. Proceedings of the National Academy of Sciences. Vol. 105. Issue 2. pp. 454-458. https://doi.org/10.1073/pnas.0702958104	0,75
10	Business for Social Responsibilty (2023): 10 Human Rights Priorities for the Transport and Logistics Sector. https://www.bsr.org/en/primers/10-human-rights-priorities-for-the-transport-and-logistics-sector	0,5
11	United Nations (2021): Sustainable transport, sustainable development. Interagency report for second Global Sustainable Transport Conference. https://sdgs.un.org/sites/default/files/2021-10/Transportation%20Report%202021_FullReport_Digital.pdf	0,75

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Acute Climate Risk at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

H	Transportation and Storage				Scoring			Reference
	Are acute climate events in the country/region already relevant for the sector under consideration?				Score	Weight	Total	
	"No"		Is it likely that this relevance will be given in the future?	"No"				
				"Yes"		1,00	0,00	1
				"Yes, very likely"		1,00		
	"Yes"	X	Observed loss of assets/property		0,75	1,00	0,75	2
			Expected impact on revenue		0,50	1,00	0,50	3
			Expected impact on costs		0,75	1,00	0,75	4
			1-3 expected to increase in the future		0,50	1,00	0,50	5
			Lack of adaptability of the business model		0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for acute climate risks (see table below)			1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			+/-	0,00	8
	Acute Climate Risk Score at Sector-Level:						3,0	Max. 4
							Σ	

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	3	United Nations (2021): Sustainable transport, sustainable development. Interagency report for second Global Sustainable Transport Conference. https://sdgs.un.org/sites/default/files/2021-10/Transportation%20Report%202021_FullReport_Digital.pdf		0,75
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Wang, T.; Qu, Z.; Yang, Z.; Nichol, T.; Clarke, G.; Ge, Y. E. (2020): Climate change research on transportation systems: Climate risks, adaptation and planning. Transportation research part D: transport and environment. 88. https://doi.org/10.1016/j.trd.2020.102553		0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	3	Kostianaia, E. A.; Kostianoy, A. G.; Scheglov, M. A.; Karelov, A. I.; Vasileisky, A. S. (2021): Impact of regional climate change on the infrastructure and operability of railway transport. Transport and Telecommunication. Vol. 22. Issue 2. pp. 183-195. https://www.proquest.com/openview/3ead5a4585dac7594e025fb685404335/1?pq-origsite=gscholar&cbl=2026667 United Nations (2021): Sustainable transport, sustainable development. Interagency report for second Global Sustainable Transport Conference. https://sdgs.un.org/sites/default/files/2021-10/Transportation%20Report%202021_FullReport_Digital.pdf		0,75
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Markolf, S. A.; Hoehne, C.; Fraser, A.; Chester, M. V.; Underwood, B. S. (2019): Transportation resilience to climate change and extreme weather events – Beyond risk and robustness. Transport policy. Vol. 74. pp. 174-186. https://doi.org/10.1016/j.tranpol.2018.11.003		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Wang, T.; Qu, Z.; Yang, Z.; Nichol, T.; Clarke, G.; Ge, Y. E. (2020): Climate change research on transportation systems: Climate risks, adaptation and planning. Transportation research part D: transport and environment. 88. https://doi.org/10.1016/j.trd.2020.102553		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high acute climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Chronic Climate Risk at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector			Score	Weight	Total	Reference
H	Transportation and Storage			**Scoring**			**Reference**
	Are chronic climate developments in the country/region already relevant for the sector under consideration?			**Score**	**Weight**	**Total**	
	"No"	Is it likely that this relevance will be given in the future?	"No"				
			"Yes"		**1,00**	0,00	1
			"Yes, very likely"		**1,00**		
	"Yes"	**X**	Observed loss of assets/property	0,50	1,00	0,50	2
			Expected impact on revenue	0,50	1,00	0,50	3
			Expected impact on costs	0,75	1,00	0,75	4
			1-3 expected to increase in the future	0,50	1,00	0,50	5
			Lack of adaptability of the business model	0,50	1,00	0,50	6
			Sectors in the supply chain have a score ≥ 2.5 for chronic climate risks (see table below)		1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)		+/-	0,00	8
	Chronic Climate Risk Score at Sector-Level:					**3,0**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Yes						
	Yes, very likely						
2	Indicator is given	x	Source Category	2	Wang, T.; Qu, Z.; Yang, Z.; Nichol, T.; Clarke, G.; Ge, Y. E. (2020): Climate change research on transportation systems: Climate risks, adaptation and planning. Transportation research part D: transport and environment. 88. https://doi.org/10.1016/j.trd.2020.102553		0,50
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Wang, T.; Qu, Z.; Yang, Z.; Nichol, T.; Clarke, G.; Ge, Y. E. (2020): Climate change research on transportation systems: Climate risks, adaptation and planning. Transportation research part D: transport and environment. 88. https://doi.org/10.1016/j.trd.2020.102553		0,50
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	3	Kostianaia, E. A.; Kostianoy, A. G.; Scheglov, M. A.; Karelov, A. I.; Vasileisky, A. S. (2021): Impact of regional climate change on the infrastructure and operability of railway transport. Transport and Telecommunication. Vol. 22. Issue 2. pp. 183-195. https://www.proquest.com/openview/3ead5a4585dac7594e025fb685404335/1?pq-origsite=gscholar&cbl=2026667 United Nations (2021): Sustainable transport, sustainable development. Interagency report for second Global Sustainable Transport Conference. https://sdgs.un.org/sites/default/files/2021-10/Transportation%20Report%202021_FullReport_Digital.pdf		0,75
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Markolf, S. A.; Hoehne, C.; Fraser, A.; Chester, M. V.; Underwood, B. S. (2019): Transportation resilience to climate change and extreme weather events – Beyond risk and robustness. Transport policy. Vol. 74. pp. 174-186. https://doi.org/10.1016/j.tranpol.2018.11.003		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	2	Wang, T.; Qu, Z.; Yang, Z.; Nichol, T.; Clarke, G.; Ge, Y. E. (2020): Climate change research on transportation systems: Climate risks, adaptation and planning. Transportation research part D: transport and environment. 88. https://doi.org/10.1016/j.trd.2020.102553 Kostianaia, E. A.; Kostianoy, A. G.; Scheglov, M. A.; Karelov, A. I.; Vasileisky, A. S. (2021): Impact of regional climate change on the infrastructure and operability of railway transport. Transport and Telecommunication. 22(2). pp. 183-195. https://www.proquest.com/openview/3ead5a4585dac7594e025fb685404335/1?pq-origsite=gscholar&cbl=2026667		0,50
	Indicator is strongly pronounced						
7	Upstream or downstream sectors in the value chain with high chronic climate risks						0,00
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

GHG Emissions

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector						
H	Transportation and Storage				**Scoring**		**Reference**
	Assignment of a score depending on the percentage of the sector emissions (X) of the total emissions of the country				**Percentage-Range**	**Total**	
	X ≥ 10%				**X**	4,00	
	10% > X ≥ 7.5%						
	7.5% > X ≥ 5%						
	5% > X ≥ 1%						
	1% > X ≥ 0.5%						
	0.5% > X ≥ 0.25%						
	Do sector activities have a negative impact on carbon sinks?	"No"		Add-on Factor 0			
		"Yes"		Add-on Factor 0.5			
		"Yes, severely"		Add-on Factor 1			
	Are sectors in the supply chain assessed with significant or existential emissions?	"No"		Add-on Factor 0			
		"Yes, score 3 emissions"		Add-on Factor 0.25			
		"Yes, score 4 emissions"		Add-on Factor 0.5			
	GHG-Emission Contribution Score at Sector-Level:					4,0	Max. 4
						Σ	

Reference			Score
1	Mepa – Ministry of Environmental Protection and Agriculture of Georgia (2021): National Greenhouse Gas Inventory Report of GEORGIA. Mepa, tiblisi.		4,00
2			0,00
3			0,00

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Probability of regulatory Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
H	Transportation and Storage					**Scoring**			**Reference**
	Is the business case of the sector under consideration likely to be affected by regulatory change (now/ near future)?					**Score**	**Weight**	**Total**	
	"No"		Is this kind of regulation already present in other relevant countries?		"No"				
					"Yes, it is planned"		**1,00**	0,00	1
					"Yes, it is established"		**1,00**		
					"Yes, it is established and a further extention is planned"		**1,00**		
	"Yes"	**X**	Announced in the country under consideration			0,75	1,00	0,75	2
			Established in the country under consideration			0,00	2,00	0,00	3
			Further extension of this very regulation announced			0,00	0,50	0,00	4
			Announced in other relevant countries			0,50	0,50	0,25	5
			Established in other relevant countries			0,75	1,00	0,75	6
			Perceived pressure of the population i.e. in the context of catastrophes or severe economic losses				1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,50	+/-	0,50	8
	Probability of regulatory Change Risk Score at Sector-Level:							**2,5**	Max. 4
								Σ	

Reference							Score
	Yes, planned						0,00
	Yes, established						
	Yes, established AND further extention planned						
2	Indicator is given	x	Source Category	3	Government of Georgia (2021): Georgia´s 2030 Climate Change Strategy (Mitigation). https://mepa.gov.ge/En/Files/ViewFile/50123		0,75
	Indicator is strongly pronounced						
3	Indicator is given		Source Category	3	World Bank (2012): A Policy Framework for Green Transportation in Georgia : Achieving Reforms and Building Infrastructure for Sustainability. https://openknowledge.worldbank.org/server/api/core/bitstreams/81119ed0-0199-52ff-bf96-40543738309d/content	Indicator is NOT given: The source dated 2012 proposes a policy framework for "green transportation". To the best of our knowledge, however, there is still no corresponding law in Georgia.	0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	The White House (2021): FACT SHEET: Biden Administration Advances the Future of Sustainable Fuels in American Aviation. https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/09/fact-sheet-biden-administration-advances-the-future-of-sustainable-fuels-in-american-aviation/ Council of the European Union (2022): Infographic - Fit for 55: increasing the uptake of greener fuels in the aviation and maritime sectors. https://www.consilium.europa.eu/en/infographics/fit-for-55-		0,50
	Indicator is strongly pronounced						
6	Indicator is given	x	Source Category	3	European Commission (2023): REGULATION (EU) 2019/631 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011 https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02019R0631-20230905		0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Economic Impact of regulatory Change at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector								
H	Transportation and Storage					Scoring			Reference
	Is it likely that the regulatory change will have an ESG-impact (in the form of opportunities, risks, costs) on the sector?					Score	Weight	Total	
	"No"		Is probability of regulatory change > 1.5 AND an ESG-impact is observed in other relevant countries?		"No, probability score < 1.5 or no ESG impact assumed"				
					"Yes, score > 1.5 and an ESG impact is assumed"		1,00	0,00	1
					"Yes, score > 1.5 and an ESG impact is perceived"		1,00		
					"Yes, score > 1.5 and a high ESG impact is perceived"		1,00		
	"Yes"	X	Effect on the business model			0,00	2,00	0,00	2
			Strong effect on the business model			0,00	1,00	0,00	3
			1-2 expected to increase in the future			0,00	0,50	0,00	4
			1 or 2 obvious in other relevant countries			0,75	1,00	0,75	5
			Impact on the value chain			0,75	0,50	0,38	6
			Lack of adaptability of the business model			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,50	+/-	0,50	8
	Impact of regulatory Change Risk Score at Sector-Level:							1,5	Max. 4
								Σ	

Reference							Score
1	No		Source Category				**0,00**
	Yes, probable						
	Yes, it is proven						
	Yes, with an proven high impact						
2	Indicator is given	**x**	Source Category	**3**			0,00
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	**x**	Source Category	**3**	European Commission (2023): REGULATION (EU) 2019/631 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011 https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02019R0631-20230905		0,75
	Indicator is strongly pronounced						
6	Indicator is given	**x**	Source Category	**3**	European Commission (2023): REGULATION (EU) 2019/631 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011 https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02019R0631-20230905	The cited regulation is also accompanied by implications for the automotive industry.	0,75
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Technological Change at Sector-Level

Date of Assessment: **Q1 2024**
Valid Until: **Q4 2025**

NACE	Sector								
H	Transportation and Storage					**Scoring**			**Reference**
	Is an alternative technology/methodology with sustainability-related advantages available/used in this sector in the country under consideration?					**Score**	**Weight**	**Total**	
	"No"		Is this technology available/ used in this sector in other relevant countries?		"No"				
					"No, to date it is just at theory/ study-level"		**1,00**	0,00	1
					"Yes, it is available and used in other relevant countries"		**1,00**		
					"Yes, it is heavily used in other relevant countries"		**1,00**		
	"Yes"	**X**	Use in the country under consideration			0,50	1,00	0,50	2
			Heavy use in the country under consideration			0,00	1,00	0,00	3
			Use in other relevant countries			0,50	0,50	0,25	4
			Heavy use in other relevant countries			0,00	1,00	0,00	5
			Accepted economic benefit of technology (lower costs and/or higher yields)			0,00	1,50	0,00	6
			Accepted strong economic benefit of technology (much lower costs and/or much higher yields)			0,00	1,00	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)				+/-	0,00	8
	Technological Change Risk Score at Sector-Level:							**1,0**	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Theory/ study level						
	Use						
	Heavy use						
2	Indicator is given	x	Source Category	2	Lui, S.; Posada, E. (2022): Landscape for mitigation and finance in Georgia's urban mobility sector. https://newclimate.org/sites/default/files/2022-04/newclimate_landscape_for_urbanmobility_georgia_final_report.pdf		0,50
	Indicator is strongly pronounced						
3	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
4	Indicator is given	x	Source Category	2	Janic, M. (2006): Sustainable transport in the European Union: A review of the past research and future ideas. Transport Reviews. Vol. 26. Issue 1. pp. 81-104. https://doi.org/10.1080/01441640500178908		0,50
	Indicator is strongly pronounced						
5	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary				0,00
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

Risk Radar

Customer Behavior at Sector-Level

Date of Assessment: Q1 2024
Valid Until: Q4 2025

NACE	Sector								
H	Transportation and Storage					Scoring			Reference
	Are customers accepting/demanding the new technology (see above assessment of technological change) in the country under consideration?					Score	Weight	Total	
	"No"		Are customers accepting/ demanding this very technology in other, export-relevant countries?		"No"				
					"Yes, the use can be recognised in its beginnings"		1,00	0,00	1
					"Yes, the use can be clearly recognised"		1,00		
					"Yes, the strong use can be clearly recognised"		1,00		
	"Yes"	X	Perceived benefits in costs/maintenance from the user's perspective			0,00	2,00	0,00	2
			Perceived benefits in health from the user's perspective			0,50	1,00	0,50	3
			Perceived benefits in quality/durability from the user's perspective			0,00	1,00	0,00	4
			Perceived benefits to society and ecosystems			0,50	0,50	0,25	5
			Mass Media presence conveying a positive image			0,00	1,00	0,00	6
			VIP-Advocates			0,00	0,50	0,00	7
			Local expert grading (score-modification between -0.5 and +0.5, see commentary below)			0,50	+/-	0,50	8
	Customer Behavior Risk Score at Sector-Level:							1,5	Max. 4

Σ

Reference							Score
1	No		Source Category				0,00
	Beginning						
	Use						
	Heavy use						
2	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
3	Indicator is given	x	Source Category	2	Litman, T.; Brenman, M. (2012): A new social equity agenda for sustainable transportation. Victoria Transport Policy Institute. https://core.ac.uk/download/pdf/30678565.pdf		0,50
	Indicator is strongly pronounced						
4	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
5	Indicator is given	x	Source Category	2	Litman, T.; Brenman, M. (2012): A new social equity agenda for sustainable transportation. Victoria Transport Policy Institute. https://core.ac.uk/download/pdf/30678565.pdf		0,50
	Indicator is strongly pronounced						
6	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
7	Indicator is given		Source Category				0,00
	Indicator is strongly pronounced						
8	Score is reduced		Explanation/ Commentary	Despite the benefits outlined, an Attitude-Behaviour Gap is evident.			0,50
	Score is increased						

Note: If the same message is send by different sources, only the strongest source is cited for each indicator. As for the given links, please also note that internet content can be subject to change. We do not take responsibility for the content or security of the websites concerned.

german
cooperation
DEUTSCHE ZUSAMMENARBEIT

Partners in
Transformation
Chambers and
Associations

implemented by

German Sparkassenstiftung
EASTERN EUROPE AND CENTRAL ASIA

საქართველოს ეროვნული ბანკი
National Bank of Georgia