

Assessment of physical climate risks for Colruyt Group

including scenario analysis with horizon 2030 and 2050

May 2024

Introduction

As part of Colruyt Group's climate adaptation strategy, an in-depth climate risk study was conducted for the first time [last](#) year to assess the potential physical impact of climate change on our operations and physical assets, taking into account the adaptation measures already implemented. For the physical risks, we also conducted a scenario analysis for our own operations, with horizon 2030 and 2050 according to scenarios RCP 2.6 and 8.5.

The study was conducted for all of Colruyt Group's own activities, with the main focus on those that qualify for the European Taxonomy (EUT).

Process

In carrying out this assessment, the following steps were taken:

1. Identification of activities and assets and expected lifespan
2. Reduction of the physical climate risks to those most relevant to Colruyt Group
3. Exposure analysis in respect of the own operations against one or more of the physical climate risks identified as material
4. Assessment of the effect on the business continuity and the equity value based on a vulnerability analysis
5. Adaptation measures

Exposure analysis

After having reduced the climate risks to those most relevant to Colruyt Group, an exposure analysis was performed to determine to what extent the assets supporting the EUT activities are exposed to one or more of the physical climate risks considered material, starting from the EU Taxonomy's Indicative Minimum List of Climate-Related Hazards.

Figure 1: Risks considered in the assessment of physical climate risks





Legend

Grey: not relevant according to geography

Blue: low risk (**Light Blue:** the company is exposed to but not vulnerable to these risks / **Dark Blue:** the company is exposed to and vulnerable to these risks, but has already put in place internal or external adaptation measures)

Orange: medium risk

Red: high risk

Risks included for Physical Climate Risk Assessment			
			
Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic			
Changing temperature	Changing wind patterns	Changing precipitation patterns and types	Coastal erosion
Heat stress		Precipitation or hydrological variability	Soil degradation
Temperature variability		Ocean acidification	Soil erosion
Permafrost thawing		Saline intrusion	Solifluction
		Sea level rise	
		Water stress	
Acute			
Heat wave	Cyclone, hurricane, typhoon	Drought	Avalanche
Cold wave/frost	Storms	Heavy precipitation	Landslide
Wildfire	Tornado	Flood (coastal, fluvial, pluvial)	Subsidence
		Glacial lake outburst	

Vulnerability analysis

In addition to the exposure analysis - to determine the materiality of each climate risk for Colruyt Group - a vulnerability analysis was performed to:

1. Define a threshold value for the various risks for the assets with at least a medium risk. Below this threshold, the risk exposure for the specific asset category is considered non-material, taking into account the most vulnerable components of the asset itself but also employees, transport, utilities, etc.
2. Estimate the probability and impact of the risk on business continuity and equity value when the threshold is reached.

Heat waves and floods

This shows that Colruyt Group is currently especially vulnerable to floods and heat waves. Logistics and production buildings are vulnerable to heat waves now and in the 2050 RCP8.5 scenario. By 2050 (RCP8.5), these impacts could increase if no additional adaptation measures are taken. In this scenario, technical and commercial buildings and afforestation land could also be vulnerable to the sharp increase in heat days (from an average of 14 days in the reference scenario to 29 days in 2050 according to RCP8.5).

Many assets in all categories are vulnerable to flooding. Especially fluvial and pluvial flooding (due to heavy precipitation when water does not penetrate the soil quickly enough) can have an impact.

Cold waves and drought

For most asset categories, there is no vulnerability to cold waves, drought or forest fires in both the reference scenario and the RCP8.5 scenario for 2050.

An exception are the logistics and production buildings (including agricultural land) for cold waves and drought. A single day of frost can already have an impact on logistics, even if that impact is very small. Although there have been no significant drought-related incidents for agricultural fields in the past, the RCP8.5 scenario for 2050 shows that drought will become more severe, which could lead to a certain level of vulnerability if there is a lack of water supplies to be used for irrigation.

Forest fires

Lastly, the risk of forest fires will increase in the 2050 RCP8.5 scenario, which could make afforestation activity vulnerable.

Risk levels

The financial implications calculated as part of the vulnerability analysis take into account both the probability and impact of a climate risk. That explains why it is a direct combination of the two scales used in Colruyt Group's strategic risk matrix.

The 'Business continuity impact' is an estimate of the impact of a climate risk on Colruyt Group's annual revenue. The 'Asset value impact' is an estimate of a climate risk's potential annual impact on asset value, as a result of the partial or complete destruction of the assets. This value includes the value of buildings, inventories, machinery and materials.

We use a scale ranging from 'Insignificant' to 'Very high' to assign a risk level to the financial impacts:

Insignificant	Very low	Low	Moderate	High	Very high
< 0.01%	0.01-0.05%	0.05-0.2%	0.2-1%	1-5%	>5%

Below is an overview of the risk levels associated with the physical impacts of climate change for Colruyt Group:

		High likelihood (occurrence every year) – limited impact			Low likelihood (one event every 100 years) – high impact	
Unit: % to total turnover / asset value	Scenario	Heat wave length	Cold wave	Drought	Riverine and coastal flood	Pluvial flood (total and heavy precipitation)
Business continuity impact (turnover)	Baseline	Insignificant	Insignificant	Insignificant	Low	Very Low
	RCP 8.5 - 2050	Very Low	Insignificant	Insignificant	0.06% (6M€)	Low
Asset value impact	Baseline	NA	NA	NA	Very Low	NA
	RCP 8.5 - 2050	NA	NA	NA	Very Low	

None of the risks associated with climate change represents a relatively high risk level for Colruyt Group's equity value. Floods appear to represent the highest level of risk. The risk level for heat waves, cold waves and drought is insignificant.

When we compare the evolution of a risk between the base scenario (now) and the RCP8.5 scenario in 2050, we see that the impact of heat waves increases dramatically (200x), that of cold waves decreases, and that of drought remains insignificant. The impact of riverine and coastal flooding remains stable, but the impact of pluvial flooding will be two times greater by 2050. Floods typically behave as an acute risk that can involve a much greater financial impact in one year than in other years. This can for instance be the case for an event that occurs once every hundred years and involves the simultaneous flooding of a high number of assets in a specific area.

Adaptation measures

On the basis of studies and regular evaluations of adaptation measures, we focus on both specifically locally targeted measures and overarching measures. Business continuity plans are prepared and regularly updated. We are committed to new adaptation measures such as the provision of additional water buffer capacity, adequate water drainage and/or collection, and the provision of additional cooling on critical installations to deal with current and future physical climate risks.

An overview of the potential climate risks to physical assets and operations of Colruyt Group, as well as current and future adaptation and protection measures, follows on the following pages.

Annex: overview of potential climate risks to physical assets and operations and adaptation approaches

Low risk	Medium risk	High risk
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			Current climate risks	Climate risks for 2050 in the high-emissions scenario (RCP 8.5)	Protection and adaptation approach
Acute	Temperature-related risks	Heat wave	Heat waves affect freight transport (delays), the health and productivity of employees and the quality of certain product categories. In refrigerated distribution centres, significantly higher energy consumption has been observed during heat periods.	The number of heatwave days and the geographic distribution of heat zones is increasing, which impacts additional activities and would likely increase the risk to existing activities.	Colruyt Group already has several adaptation measures in place with regard to construction, refrigeration, transport and personnel and is therefore quite resilient to the magnitude of heat waves. However, if temperatures continue to rise, it is likely that additional measures will be required and the continuity of some activities will be affected. Business continuity plans are regularly reviewed and adjusted. Measures taken are evaluated and adjusted with extra attention to exposed areas.
			Cold waves impact transport and personnel as there is a direct impact on traffic (slipperiness, accessibility, etc.). There may also be an impact on agricultural crops and construction.	The number of cold wave days and the geographic distribution of cold zones is decreasing, which would likely lower the risk to existing activities.	
Acute	Temperature-related risks	Cold wave	Cold waves impact transport and personnel as there is a direct impact on traffic (slipperiness, accessibility, etc.). There may also be an impact on agricultural crops and construction.	The number of cold wave days and the geographic distribution of cold zones is decreasing, which would likely lower the risk to existing activities.	Plans related to construction activities are being reviewed. Prefabrication methods are also increasingly being used in order to be less dependent on weather conditions. For central services employees, it is usually acceptable to work from home during a cold snap or frost. During cold waves and frosts, unnecessary deliveries are delayed. Building energy levels are screened and insulation is routinely provided where needed.

Acute	Temperature-related risks	Wild fires			Measures have been taken to reduce wildfires. Firebreaks are being used and awareness is being raised. Anti-fire brigades have been appointed in the villages, who are responsible for awareness raising and prevention, to extinguish small fires and to check the quality of the firebreaks.
			Moderate fire risk weather conditions are relevant to a part of all assets. This can lead to property damage and disruption of the utilities from local fires ranging from smoke damage to complete destruction of assets. For the afforestation project in DRC, the impact could be significant.	The vulnerability of the forest significantly increases due to an increase (quasi doubling) in the number of hot and dry days.	
Acute	Wind-related risks	Tornado or storm			Heavy winds are already taken into account in the design of existing buildings and installations. It is reasonable to assume that a solid maintenance and inspection regime of the current sites, as well as adherence to best practices regarding wind design specifications, emergency plans and business continuity plans, should help prevent and mitigate a significant impact on operations.
			Some Colruyt Group sites are moderately affected by windstorms, while the majority of their assets are not materially exposed. Severe storms can cause damage to Colruyt Group sites, ranging from minor damage (e.g. an insulation panel coming loose) to partial destruction of the building (due to e.g. a fallen tree, construction crane, etc.)	No substantial changes regarding windstorm exposure.	

Acute	Water-related risks	Flooding and precipitation			
			<p>Currently, some of Colruyt-Group's activities take place in environments with an increased risk of flooding; this is due either to flooding of rivers or to short but heavy precipitation because of which water cannot penetrate the soil quickly enough. Impacts to those assets may include damage to infrastructure, equipment and materials, as well as disruption to the operation of essential utilities. No significant flooding occurred in 2022.</p>	<p>No substantial changes in exposure, but in some locations exposure is already very high.</p>	
Acute	Water-related risks	Drought			
			<p>Drought may impact the growth of trees in the afforestation project and crop yields on our own agricultural land.</p>	<p>The number of drought days will decrease slightly on average in the coming years, although the minimum and maximum values will increase. The largest increase in the amount of days of drought is reported for locations in India and China.</p>	

Chronic	Water-related risks	Salt intrusion			Soil quality is monitored regularly.
			Salt intrusion can damage crops growing in agricultural fields and affect soil quality.	Salt intrusion occurs in the groundwater at the Belgian coast, which could affect the agricultural production of 1 agricultural site.	
Chronic	Soil-related risks	Soil degradation and erosion			This risk will be further investigated.
			Soil degradation and erosion may impact the growth of trees in the afforestation project and crop yields on our own agricultural land.	The effect of soil erosion is amplified by human activities.	
Acute	Soil-related risks	Landslide			An event with a low likelihood of occurrence but high impact, such as a massive landslide in Belgium, may still pose a significant risk to an organisation and should be considered in risk management strategies.
			For assets in all categories, the impact of a landslide is estimated to be average. Should such an event occur, it would have drastic implications for asset values and business continuity (depending on the criticality of the assets).	No substantial changes regarding landslide exposure.	