Green Consumption Assistant

Working Paper: Climate Pledge Rating – A hands-on Evaluation and Visualization of Companies' Responses to Climate Change

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Abstract

The climate crisis is already causing heat waves, floods, droughts, and many more severe impacts on earth. As outlined by the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) drastic action is necessary to reduce greenhouse gas (GHG) emissions and limit the global temperature increase to 1.5 °C. This requires halving global GHG emissions by 2030 and reaching net-zero emissions by 2050. To reach this goal, governments, individuals, and the private sector need to take immediate action. In recent years, many companies have come forward with net-zero pledges and carbon reduction targets. However, understanding those pledges and evaluating whether they are ambitious and credible or mainly PR tools is challenging and can be misleading. One initiative attempting to increase the transparency of companies' climate pledges is the Climate Pledge Rating, which was developed and implemented within the Green Consumption Assistant (GCA), a joint project by the Technical University of Berlin, the Berliner Hochschule für Technik, and the green search engine Ecosia. The rating shows evaluations and ratings of pledges from selected companies to users of Ecosia. Thereby, it reduces the information complexity of pledges and informs users about the ambition behind the companies' climate commitment and what those would mean for achieving the goal to keep the global temperature from rising beyond 1.5 °C.

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Content

1. Introduction

Floods, droughts, massive species extinction, hunger, heat waves, and rising sea levels are just a few devastating impacts of the climate crisis. In 2022, the Intergovernmental Panel on Climate Change (IPCC) published its Sixth Assessment Report, highlighting that climate impacts are already happening and will become more severe within the next decades. The report outlines that some impacts on human life and the ecosystem are already inevitable. However, with each additional temperature increase, the climate catastrophe will become more severe. For instance, with an increase of 3 °C instead of 1.5 °C approximately 340 million more people will be exposed to water stress, heat stress, and desertification and almost one-third of species will be at high risk of facing extinction (IPCC 2022a). Nevertheless, the report also states that "near-term actions that limit global warming to close to 1.5 °C would substantially reduce projected losses and damages related to climate change in human systems and ecosystems […]" (IPCC 2022b). This would require GHG emissions to peak by 2025 and be reduced by 43%, almost halved, by 2030. Additionally, it requires achieving net-zero carbon dioxide emissions globally in the early 2050s (IPCC 2022b). In a press release along with the publication of the Sixth Assessment Report, the IPCC stated that "without immediate and deep emissions reductions across all sectors, limiting global warming to 1.5 °C is beyond reach" but that there are options in all sectors to "halve emissions by 2030" (IPCC 2022a).

In recent years, many companies have committed to taking climate action – pledging to reduce emissions and become carbon net-zero or even climate positive1. Pledges on companies' websites, in news, and in sustainability reports paint green pictures of their environmental and climate performance. Especially since the Paris Agreement was accepted under the United Nations Framework Convention on Climate Change in 2015, the number of major companies that have put forward pledges to achieve net-zero emissions has grown significantly (Hale et al. 2022). According to the Net Zero Tracker, about 769 companies out of the 2,000 largest publicly-traded companies have made some kind of net-zero pledge (Net Zero Tracker 2022). However, as global emissions keep rising, so do criticism and scepticism of net-zero pledges.

Civil society, research, and also businesses question the reliability and credibility of climate pledges, and some argue that especially net-zero pledges are more motivated by marketing interests than actual climate protection interests (Greenpeace 2021; Watson et al. 2019). One main focus of criticism is directed at carbon offset projects used by companies to compensate for their emissions. Another takes aim at the scope companies use to measure emissions which are then addressed in their reduction pledges. Both aspects will be explained in more detail in the next chapter.

The heterogeneity of pledges as well as their criticism can overwhelm customers judging the ambition and credibility behind a company's climate commitment. How serious is the company when it comes to emission reduction, and would its fulfilment actually be sufficient to prevent global warming from rising beyond 1,5 °C, or is the net-zero pledge mainly an act of greenwashing?

To face this challenge, we developed a new feature for Ecosia's search site – the Climate Pledge Rating. Tackling the issues of information complexity and the lack of transparency of companies' climate pledges, the Climate Pledge Rating informs users of Ecosia about the credibility and ambition behind the climate pledges of selected companies. The Climate Pledge Rating evaluates climate

[1] Climate positive refers to activities that go beyond achieving net-zero carbon emissions to create an environmental benefit by removing additional carbon dioxide from the atmosphere. Carbon negative means the same thing as climate positive.

pledges and rates them according to criteria regarding their implication for achieving the 1,5 °C goal. The ratings and short explanations are shown to users.

In the following, we will first give more background information on carbon offset and the challenges of measuring and reducing a company's emissions. We will then describe how the rating was developed, before showing the first results when applying this rating to a selection of 17 companies. The last chapter will outline limitations as well as options for further research and the development of the Climate Pledge Rating.

2. Background

Carbon offset

One criticism of net-zero pledges is directed at carbon offset measures, which are almost always part of net-zero pledges. For most companies, it is impossible to reduce their emissions to zero. However, to reach a net-zero emissions status, companies have the option to compensate emissions that can't be reduced, e.g., by investing in carbon offset projects. Carbon offset describes a reduction in carbon emissions or an increase in carbon storage, e.g., through land restoration and afforestation projects, which is used to compensate for emissions that occur elsewhere. If performed correctly, carbon offset projects can contribute to climate protection. However, the concept of carbon offset faces multiple criticisms, such as that some offset projects do not achieve the promised carbon storage/absorption or that it benefits rich corporations. For example, some offset projects are accused of selling carbon offsets that would have happened anyway (e.g., through the preservation of forests that would not have been destroyed in the first place), resulting in no additional advantage for climate protection. Studies show that offsets do not always require additional effort, and that reliance on them may present risks to effective mitigation (Pan et al. 2022; Greenpeace 2021).

Measuring Climate Emissions – Scope 1-3

Another focus of criticism addresses the emissions that some companies include or, more importantly, exclude from their emission accounting and their pledges. All companies have different emissions depending on numerous aspects such as their products and services, suppliers, or energy sources. To reduce emissions, a company first needs to know where they occur. The most established tool for companies to take inventory of their emissions is the GHG Protocol Corporate Standard. The GHG Protocol classifies a company's GHG emissions according to three 'scopes' and distinguishes between downstream and upstream activities (Figure 1).

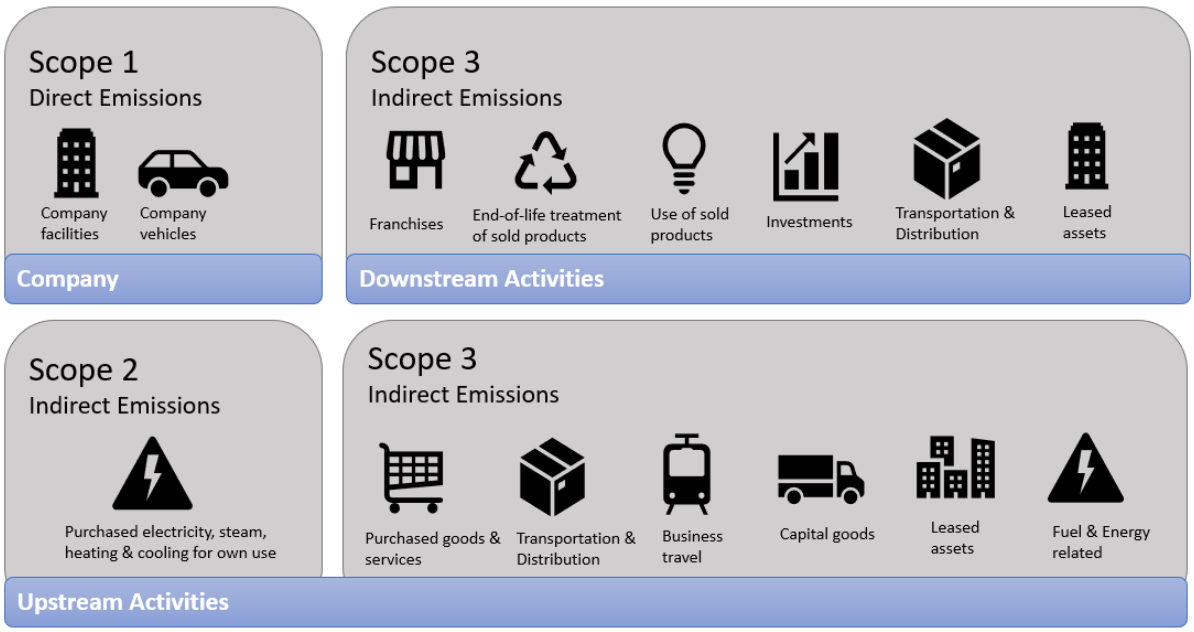

Figure 1: Direct and Indirect Emissions - Scope 1-3 Source: Own illustration based on Plan A (2022)

Scope 1: Direct emissions from the company owned or controlled sources, e.g., company vehicles.
Scope 2: Indirect emissions from the generation of purchased energy.
Scope 3: All indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions, i.e., all emissions, from raw material extraction (upstream) to the use of the end product (downstream).

Though it is comparatively easy for most companies to measure their direct scope 1 and indirect scope 2 emissions, scope 3 emissions are often difficult to measure and even harder to reduce. However, for many global companies those emissions make up the largest part of their total emissions. The audio streaming and media services provider Spotify, for example, states in its 2021 "Equity and Impact Report" that 99% of its emissions occur along the company's value chain (Spotify 2021). As mentioned, scope 3 emissions occur along a company's value chain, in instances such as purchased goods and services or the use of sold products. Furthermore, the value chain emissions of one company can overlap with the emissions of another company, e.g., the direct emissions of a supplier. Therefore, to ensure a sufficient reduction of global emissions it is necessary for companies to measure and reduce their scope 3 emissions, e.g., by giving suppliers incentives to reduce their scope 1 and scope 2 emissions. Companies' measurements of scope 3 emissions are often criticised for being inconsistent and having large emission accounting gaps. Furthermore, their measurements are not suitable for comparisons between companies since companies use different criteria for including or excluding emissions sources. Some companies are found only to include a subset of emissions occurring under scope 3, or to exclude scope 3 from their net-zero pledges altogether (Klaaßen and Stoll 2021). This makes it even harder for customers and other stakeholders to interpret the actual comprehensiveness and ambition of net-zero pledges.

3. Method

To support the transparency and comprehensibility of companies' climate pledges, we developed a simplified rating of climate pledges and a feature for use on Ecosia's search site. The feature was designed to have a good reach on Ecosia and achieve a balance between required development time and impact. It simplifies and visualizes companies' climate pledges, while being applicable for companies from different industries. It also enables an evaluation of companies' climate pledges based on publicly available data.

The most queried search terms on Ecosia are connected to a selected group of companies. Therefore, we counted search terms that are closely associated with a company. In doing so we came up with a list of 17 companies (Table 1) of which climate pledge evaluation would have the biggest reach on Ecosia users.

In the case of large conglomerates, the climate pledge evaluated is that of the parent company. For example, in the case of Facebook we estimated the response of Meta, the company behind Facebook and Instagram[2].

Table 1: Most searched companies on Ecosia

Company
Adevinta
Advance Publications (Reddit, Discovery, Condé Nast, etc)
Amazon (incl IMDB)
BBC (news, sport, iPlayer)
eBay
Etsy
Google (Alphabet, Youtube, Maps, Gmail, Translate, etc.)
Ikea
Meta (Facebook, Instagram, Whatsapp)
Microsoft (Office, Hotmail, LinkedIn, Github, Bing)
MindGeek (Pornhub)
Netflix
Pinterest
Spotify
The Guardian
The New York Times Company (Wordle, NYTimes)
Twitter

Available data sources on climate pledges

To evaluate the climate pledges of the selected 17 companies, we evaluated different data sources. There are different existing organizations and initiatives that already collect and publish information on evaluations of companies' climate commitments. We first assessed whether some of those are suitable to be used as data source for the Climate Pledge Rating.

[2] An exception in made for Google since Google makes up to 99% of revenue from its parent organization 'Alphabet.' We found a climate targets and further sustainability commitments under the name of Google (Google 2021).

Among the best known is the Carbon Disclosure Project (CDP), a non-profit charity that helps companies and cities disclose their environmental impact using the CDP's three corporate questionnaires on climate change, water security, and forests. In 2021, the CDP reported that over 13,000 companies worth over 64% of global market capitalization disclosed data through CDP on climate change, water security, and deforestation (CDP 2021). In partnership with the CDP are the United Nations Global Compact, World Resources Institute, and the World Wide Fund for Nature (WWF). Another important initiative that aims to drive climate action in the private sector is the Science Based Targets initiative (SBTi). Companies joining the SBTi set science-based emission reduction targets. Targets are considered 'science-based' if they are "in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement – limiting global warming to well-below 2 °C above pre-industrial levels and pursuing efforts to limit warming to 1.5 °C" (SBTi 2022). After voluntarily registering their intent, companies can develop emissions reduction targets in line with the SBTi's criteria, which are afterwards validated by the SBT. Progress is tracked annually (SBTi 2022). Another critical analysis of companies' climate pledges, the Corporate Climate Responsibility Monitor, was conducted by the New Climate Institute (NCI) and published in February 2022. The report assesses the climate strategies of 25 major global companies based on publicly available information and found that even though all assessed companies had set some form of zero-emission, net-zero or carbon-neutral target, just 3 of the 25 companies clearly commit to deep decarbonization. The report illustrates findings in a rating. Those findings partly contradict evaluations under the SBTi (Day et al. 2021).

However, none of the above data sources had assessed all companies nominated for the Climate Pledge Rating. Neither could they provide suitable data to assess the companies' climate pledges. Moreover, a comparison or even a combination of the three data sources would be difficult since their methodology as well as their purpose differs. In some cases, their assessments even result in inconsistent evaluations of the same company. Instead, more general information about the assessed companies was taken as background knowledge for the Climate Pledge Rating. Since none of the data sources met our requirements, we decided to develop our own rating approach and evaluated the selected companies based on their publicly available climate pledges and sustainability reports.

Developing the Climate Pledge Rating

Whether a company's climate pledge is sufficient to reach the 1,5° C goal depends on multiple factors, such as the used reference and target years, the emissions they consider (scope 1-3), their emission compensation strategies and projects, the comprehensiveness of the considered GHG emission types, as well as the credibility and detail of steps with which the company plans to achieve those targets and measure and report their impact (Arnold and Toledano 2021; Hale et al. 2022; Day et al. 2021).

Due to the restricted resources of the team members developing and implementing the Climate Pledge Rating, we were not able to consider all factors in our manual evaluation. Furthermore, some company-specific aspects and measures outlined in pledges are not suitable for comparison with other aspects of other pledges. For the development of the Climate Pledge Rating, we used the likeliness of achieving the 1,5° C goal based on the IPCC's report as a guiding principle. According to the IPCC, emissions must be almost halved by 2030. Therefore, we chose the reduction of overall emissions (covering all three scopes) by at least 50% by 2030 as the main criteria for awarding a rating. Since the IPCC states that it is necessary to achieve global net-zero emissions in order to stabilize the climate (IPCC 2022b), we considered the availability and target year of the companies'

net-zero commitments for the rating. More precisely we considered the following questions for the development of the rating:

1. Does the company have a net-zero commitment?
2. What is the target year of the net-zero commitment?
3. Does the company have concrete reduction targets for scope 1, scope 2 and scope 3 emissions?
4. Do the reduction targets cover at least 50% of the company's overall emissions?
5. What are the target years for the emissions reduction?
6. If the company has a net zero pledge as well as high emission reduction targets, can we see progress towards reaching those targets within the last year?

Based on those questions, we developed a five-scale rating (Table 2) from A "Good" to F "Falling," wherein A is the highest and F is the lowest grade. Due to the challenges related to carbon offset, we chose the target year 2030 for achieving net-zero emissions as a prerequisite for receiving the highest rating.

Table 2: Climate Pledge Ranking - Scale A-F

Summary	Description
Grade A or "Leading response": A company that pledges to reduce its overall emissions by at least 50% and reach net zero emissions by 2030. On track with progress towards targets.	This is the highest possible rating. If everyone followed this approach the chances are high that global temperature increase could be limited to 1.5°C. For companies to receive this rating they must pledge to reduce their overall emissions (direct emissions, energy emissions, and indirect value chain emissions) by at least 50% and offset the remaining emissions by 2030. Additionally, they must provide credible evidence that they are on track toward reaching their emission reduction targets. Such evidence can be in the form of third-party verification or credible sustainability reports.
Grade B or "Good response": A company that pledges to reduce its overall emissions by at least 50% and reach net zero emissions by 2030. No evidence to show progress towards targets	Companies with the B rating have good and credible climate commitments. If everyone followed such targets and fulfilled them, the chances are high that global temperature increase could be limited to 1.5°C. For companies to receive this rating they must pledge to reduce their overall emissions (direct emissions, energy emissions, and indirect value chain emissions) by at least 50% and offset the remaining emissions by 2030.
Grade C or "Modest response": A company that pledges to reduce its overall emissions and reach net zero emissions by 2030 or pledges to reduce overall emissions by at least 50% and reach net zero by 2050.	The "Modest" rating is given to companies that aim to reduce their overall emissions (direct emissions, energy emissions, and indirect value chain emissions) and offset the remaining emissions by 2030. This also includes companies that pledge to reduce their overall emissions but don't have clear, publicly available reduction targets for all emission scopes, and companies that pledge to reduce overall emissions by over 50% by 2050. A company that has targets to reduce overall emissions by 2030 but no direct net zero pledge also receives a "Modest" rating since we prioritise emission reduction over offsetting.
Grade D or "Weak response": A company that pledges to reduce some emissions and reach net zero emissions by 2050. No clear and credible plan for reducing emissions across the entire value chain.	A "Weak" rating is given to companies that pledge to reduce emissions and reach net zero emissions by 2050, but don't state concrete reduction targets for their overall emissions. Additionally, their goal to reach net zero emissions is so far in the future that it might be too late to prevent global temperatures from rising dramatically.
Grade F or "Failing response": No publicly available climate pledge and no evidence of credible climate action.	Companies receive the "Failing" rating if we could not find any evidence of a credible climate response or if the responses are far from having any positive impact on climate change. If everyone followed such a climate response, global temperatures would rise far above 1.5°C and have devastating consequences for human life and ecosystems within this century.

To reduce complexity when communicating the Climate Pledge Rating to users of Ecosia, the term "direct emissions" was used when referring to scope 1 emissions, "indirect energy emissions" for scope 2 emissions, and "indirect emissions" when referring to the companies' scope 3 emissions.

Data generation and evaluation

After creating a rating scale, we started to collect comparable information about the climate pledges of the selected companies. For this, we relied on a labor-intensive, comprehensive process of individually reviewing publicly available information. For the collection of data, we conducted an online search for each of the 17 companies using the following search terms: climate pledge, climate commitment, climate protection, sustainability report, emission targets, net zero pledge, and scope 3 reduction. Each keyword was paired with the company's name. Using this process, we were able to identify relevant sources, such as sustainability reports and self-descriptions, etc.

Another main data source was the companies' sustainability reports available on their websites. The search was conducted in English. Information was only considered if it came directly from the respective company (primary materials). Other information sources, such as news reports, were not considered. The data acquisition activities were undertaken between March and May 2022. We plan to update the data manually every six months.

For the actual assessment, we manually evaluated whether a company fulfilled the rating criteria for an 'A' rating. If those criteria were not met, we assessed the fulfilment of criteria for a 'B' rating. If the 'B' rating was also not met we continued to the 'C' rating and so on. If no credible information about a company's climate commitment was found, the company received a 'F' rating.

When evaluating the data, we found many individual aspects that influence each company's climate commitment and performance. However, the Climate Pledge Rating solely evaluates climate pledges. Other sustainability-related issues, such as the business model, further social engagement, or treatment of employees were not considered. After developing the rating approach, we searched online for information on companies' climate pledges. Information was only considered if it stemmed directly from a source published by the company. Pledges were found in climate and sustainability reports on the company's websites. In each case, the latest entries were considered. In the case of the New York Times Company and Spotify, the available information didn't meet our requirements. Therefore, we reached out to the companies but did not receive a reply. Based on the available information, all 17 companies were rated.

4. Results of the ratings

The manual evaluation of the companies' climate pledges highlighted major differences when it comes to setting actual emission reduction targets. The majority of companies published their emission data as well as their reduction targets in annual sustainability reports. Of the 17 assessed companies, none received a 'Leading' rating (A) and four received a 'Failing' rating (F) (Table 3). Only Microsoft and The Guardian received a 'B' rating.

Currently, not all company ratings are displayed in Ecosia since we are still working on the display logic of certain domains. This process is still undergoing constant changes.

Companies	Rating	Pledge – climate commitment	Pledge - missing aspects to receive better rating	Source
Adevinta[3]	**D Weak**	Has calculated its overall emissions and aims to set reduction targets in the future.	No pledge to become net zero and no concrete targets to reduce emissions.	Adevinta: Sustainability Report 2021
Advance Publications	**F Failing**	N/A	No publicly available climate pledge.	/
Amazon	**D Weak**	Pledges to reach net zero emissions across its business by 2040 and power its operations with 100% renewable energy by 2025.	Net zero target is too late and there's no clear target for reducing emissions external emissions other than the organization's energy consumption.	About Amazon: Sustainable Operations
BBC	**C Modest**	The BBC pledges to reach net zero by 2030, reduce emissions in its direct operations and its indirect energy emissions by 46%, and reduce further indirect emissions by 28% by 2030.	Pledge to reduce overall emissions falls short.	Our Plan: The BBC's Path to Net Zero
eBay	**C Modest**	Pledges to reduce to reduce its direct emissions by 90% and indirect emissions by 20% by 2030 and use carbon-free energy for its offices and data centres by the end of 2021.	No net zero pledge.	eBay Impact 2021 Report
Etsy	**C Modest**	Etsy pledges to reach net zero, reduce its direct and energy emissions by 50% and further indirect emissions by 13.5% by 2030 by powering its marketplace with 100% renewable electricity.	Pledge to reduce indirect emissions other than the organization's energy emissions is less than 50%.	Etsy Pledges Net Zero Carbon Emissions by 2030
Google	**C Modest**	Pledges to operate on 100% carbon-free energy, reduce its overall emissions by 2030 and reach net zero by 2030.	No concrete reduction targets for indirect emissions other than the organization's energy consumption.	Google Environmental Report 2021 Google: Our third decade of climate action IP

[3] Adevinta, parent organization of eBay Kleinanzeigen, stated that in 2021 23.7m tonnes of carbon emissions were potentially saved by people who chose to buy and sell used items through Adevinta's marketplaces (Adevinta 2021). Nevertheless, this benefit was not evaluated in this study since we focused on the companies' targets to reduce their own emissions and did not evaluate their business models

Ikea	**C Modest**	Pledges to reach net zero by 2050, and reduce overall emissions by 50% by 2030.	Net zero target is too late.	IKEA: Becoming climate positive
Meta	**C Modest**	Pledges to reach net zero by 2030 and reduce overall emissions by 2030.	No concrete reduction targets for indirect emissions other than the organization's energy consumption.	Climate - Meta Sustainability
Microsoft	**B Good**	Pledges to become carbon negative and reduce overall emissions by more than 50% by 2030.	Not on track to reach overall emission reduction targets: indirect emissions other than the organization's energy consumption increased in 2021.	Microsoft: 2021 Environmental Sustainability Report
MindGeek	**F Failing**	N/A	No publicly available climate pledge.	/
Netflix	**C Modest**	Pledges to reduce internal and external energy emissions (scope 1 and scope 2) by 45% by 2030 and to reach net zero by 2022.	No concrete reduction targets for indirect emissions other than the organization's energy consumption.	Netflix: Net Zero + Nature
Pinterest	**F Failing**	N/A	No publicly available climate pledge.	/
Spotify	**C Modest**	Pledges to reduce overall emissions by 2030 and reach net zero within the next decade.	No concrete reduction targets for all emissions.	Spotify: Equity Impact Report 2021
The Guardian	**B Good**	Pledges to reach net zero by 2030 and reduce 67% of its overall emissions by 2030.	Not yet net zero and needs to take further steps to reach emission reduction target.	The Guardian's Climate Pledge 2019 Positive Impact and Sustainability Report 2019/2020
The New York Times Company	**F Failing**	N/A	No publicly available climate pledge.	/
Twitter	**D Weak**	Pledges to significantly reduce emissions by 2030 and power its data centres with 100% carbon-neutral energy by 2022.	No net zero target and no clear target to reduce emissions.	Twitter: Accelerating our climate commitments on Earth Day

Visualizing and communicating the rating

To communicate the ratings to users of Ecosia, we designed icons[4] and information boxes that will be displayed next to the search results on Ecosia's search engine whenever a user searches for the parent organization or a subsidiary. The information box displays simplified descriptions of the pledges to decrease information complexity. The icons show the company's respective rating letter (A-F). As shown in Figure 2, the rating icon is displayed next to the URL of the company and again in a box on the left sidebar next to the search results (1). Users who want to know more can click on "Show details" (2), revealing a short summary of the rating's important positives and some missing aspects of the company's climate pledge. Users can then click on "See what this means" so an overlay box appears (3) with a slightly more detailed summary of the company pledge as well as a short explanation of the impact the company's pledge could have on the 1,5° C goal, if every company were to act in the same manner.

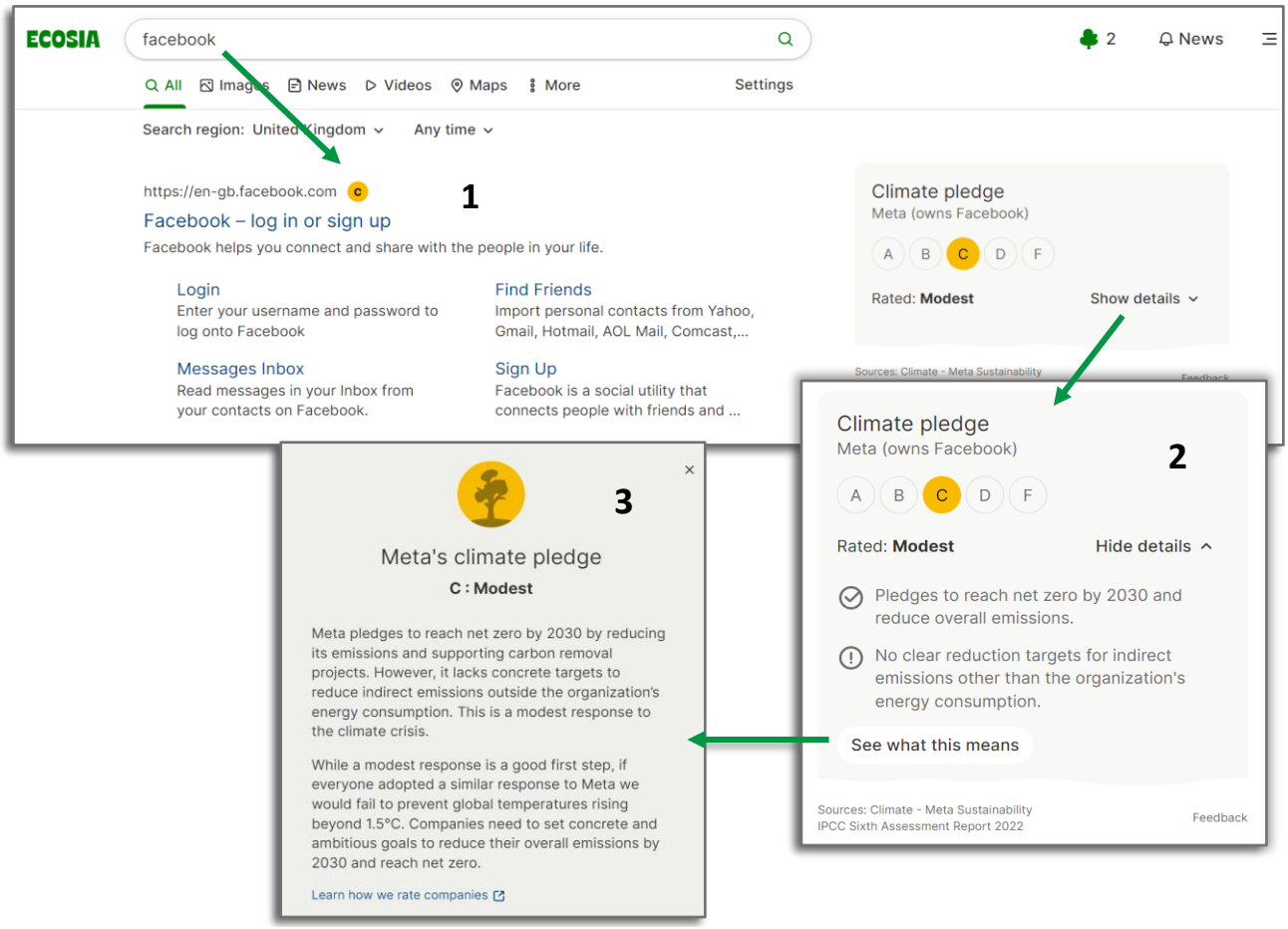

Figure 2: Climate Pledge Rating displayed in Ecosia

[4] The design of the feature and its icons was done by the Ecosia team.

5. Discussion of limitations and further developments of the Climate Pledge Rating

The first version of the feature summarizes positive as well as lacking aspects of companies' climate pledges. It found that several large corporations lack transparent carbon reduction targets, especially for their scope 3 value chain emissions. The Climate Pledge Rating evaluates companies based on their publicly available responses to climate change, which are usually made in the form of climate pledges or included in their sustainability reports. Thus, the company's rating was influenced by the information we were able to find online. The actual impact of a company's efforts to reduce emissions cannot be included in the evaluation.

We acknowledge that some companies' business models are more sustainable than others, e.g., Adevinta provides users with an online marketplace that enables them to buy and sell used goods, which helps reduce resource-use and emissions that would occur during the manufacture of new products. However, the Climate Pledge Rating does not evaluate business models, focusing instead on companies' commitments to reduce their direct and indirect emissions. Additionally, for a more detailed and comprehensive evaluation of pledges, the individual reference year, as well as the scope of accounted emissions would need to be considered. Furthermore, the current version of the Climate Pledge Rating does not assess whether companies address all different types of GHG emissions in their commitments, or only carbon emissions. Neither does the Climate Pledge Rating consider whether targets are "science based" and which measures are planned to achieve those targets. Considering these more detailed and individual characteristics of the pledges would increase the persuasiveness and comprehensiveness of the rating. However, bearing in mind that our approach involved the labor-intensive process of individually reviewing publicly available information, this remains beyond the scope of our current approach. It would also require access to further (not publicly available) data. We therefore chose to award companies which have high emission reduction targets in all scopes, and to penalize those which don't.

To better communicate the evaluation of the climate pledges and reduce information complexity for users of Ecosia, only short summaries of important aspects of the pledges are displayed, using mostly standardized wording. This amounts to a trade-off between the individual and complex aspects of some climate commitments. Therefore, we acknowledge that the Climate Pledge Rating is a limited look at the complex topic of climate responses and the different challenges companies face.

There are various options for further development of the Climate Pledge Rating. At the moment, we see three possible ways to iterate the feature: (i) Scaling – expanding to more companies, (ii) Depth – including more criteria for pledge evaluations, and (iii) Comparison – offering users alternatives.

i. Scaling: The first version of the Climate Pledge Rating was conducted for 17 selected companies. Due to individual wording and differences in climate pledges and sustainability reports, manual evaluations are difficult to scale and can be outdated as soon as companies publish new or adapted climate commitments. Including a smaller number of new companies and organizations could be done manually. We plan to update the evaluations manually every six months. To achieve scale, we are currently in exchange with different organizations that may be able to provide the data sources needed to atomize, or partly atomize, the Climate Pledge rating.

ii. Depth: As mentioned above, multiple aspects influence the potential climate impact of companies' pledges. Due to resource constraints, we won't be able to consider all these when comparing and rating companies. However, a further development of the Climate Pledge rating could consider the credibility of the planned emission reduction measures and

industry specific emission aspects, as well as whether a company is on track with its emission reduction targets.

iii. Comparison: This first version of the Climate Pledge Rating shows the rating and a short explanation for a single company. This increases transparency, but does not offer search engine users any alternatives or other means of action against climate change. The next iteration of the Climate Pledge Rating plans to give users the opportunity to compare companies which offer the same products or services. This would enable users to take companies' climate ratings into account when making consumption decisions.

To summarize, the Climate Pledge Rating attempts to increase transparency regarding the credibility and ambition of companies' climate pledges, and what their commitments imply for the goal of keeping the global temperature from rising beyond 1.5 °C. Due to the complexity of companies' emissions, their differences in emissions measurements, individual reductions, and offset targets, it was not possible to atomize the evaluation for this first iteration of the Climate Pledge Rating. Additionally, further individual aspects of companies' climate commitments could not be considered due to the lack of available data and the scope of this study. This could impact the ratings. However, the assessment of the climate pledges of 17 of the most searched companies on Ecosia already indicates big differences between companies – even between those that pledge to achieve net-zero emissions. The Climate Pledge Rating therefore helps users of Ecosia to easily comprehend the good and lacking aspects of climate pledges, and to put them into perspective in relation to the 1.5 °C goal.

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