

An EcoWakening: Measuring awareness, engagement and action for nature

Methodology

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An EcoWakening: Measuring awareness, engagement and action for nature is a research programme, conducted by The Economist Intelligence Unit, that assess public sentiment towards nature-loss and biodiversity. The research programme, commissioned by WWF, aims to show that millions of people around the world care about biodiversity-loss and to push policy makers to take more radical action for nature. The programme explores awareness, engagement and action for nature across 54 countries (or 80% of the world's population). The report was researched and developed between May 2020 and May 2021. The research framework includes primary research using social media analysis and Google trends data, as well as secondary research from partner organisations and surveys.

The data workbook and report can be downloaded at: eiu.perspectives.economist.com/ecowakening

1. Research Framework Development

In the first phase of the programme, The EIU conducted a literature review and data audit in order to develop key definitions and develop a preliminary research framework.

Research questions

- How should the terms 'society' and 'civil' society be defined?
- How should the terms 'action' and 'engagement' be defined?
- What approaches have been used in the past to measure society's engagement and action both for nature and for other social issues (e.g., climate change)?

The review was used to define the categories of engagement and action in the proposed framework, and to inform indicator selection for each category.

Key definitions & concepts

Society or Civil Society

A 'society' encompasses all the people living within a country or other geographical or political entity, within which some common decision-making is necessary. A person can be a part of a society without being an active participant in civic processes. The term 'civil society', on the other hand, implies a degree of civic participation. It signifies groups or networks of people interacting in order to influence societal outcomes in some way. For the purposes of this project, we focus on 'society' as individual actions and engagement rather than the actions / engagement of governments, private sector organisations or even civil society organisations.

Engagement & Action

The terms 'engagement' and 'action' with regard to environmental, social or political issues have significant overlap (along with similar terms, such as 'participation' and 'activism'). For the purposes of this programme, we refer to engagement as individual thoughts, attitudes and sentiments, while action relates to specific activities undertaken by individuals.

Measuring engagement and action

There is no single agreed taxonomy for categorising forms of engagement or action. However, there is a consensus that a spectrum exists, with varying degrees of individual and collective, formal and informal, latent and manifest, and civil and political forms. Many frameworks conceptualise the spectrum as a scale along which individuals can move to become more activist. Much of the body of research has focused on the question of what drives people to move along the scale from passive or internal engagement to action.

At the passive end of the scale are individual behaviours such as accessing information and forming opinions. These may lead to actions with some limited impact, such as letter-writing, engaging with community groups and making donations to causes. The scale eventually reaches more activist behaviours, such as participating in civil society organisations (CSOs), through formal political institutions or via unconventional means. As someone moves up the scale, the impact they expect to exert on outcomes is greater.

That said, in practice, engagement and action are not linear, and one individual can move between activities over a period of time – sometimes engaging in direct action (e.g., protests) and at other times engaging in more passive activities. For the purposes of this project, The EIU designed a framework that captured both passive and active elements in order to gather data across the full spectrum of engagement.

2. Research Framework Categories

Individual engagement: Engagement on biodiversity and nature conservation includes the information people choose to access and the views that they form as a result. This category first looks at the extent to which people in each country are accessing information on biodiversity and nature loss through the Internet and other media. Measures include the popularity of key terms, the amount of relevant material available, and the popularity of this material--whether in the form of news articles, books or TV and films. It then assesses people's level of awareness of, and concern for, these issues through survey data and social media analysis.

Individual actions: This category focuses on behavioural changes individuals make in order to protect nature and biodiversity or what actions they take to influence others to do the same. This can be done through consumer choices and recycling habits, as well as by writing and sharing relevant information with a view to influencing others. Starting with steps to 'be the change you wish to see', this category captures the extent to which individuals are adapting their consumer habits to be more in line with the needs of nature. It also explores online actions aimed at influencing the views of others, looking at the frequency with which individuals post and share information related to biodiversity and nature loss online.

Collective actions: In order to have more impact on environmental outcomes, individuals must come together to work in groups or networks. This typically involves participating in actions, protests or civil disobedience. The third category captures the extent to which people are actively working to exert a positive impact on biodiversity and nature loss through civil society groups and networks. It covers actions such as campaigning and participation in protests. These are assessed using an analysis of news-media organisations and data from campaign organisations.

3. Indicator list

#	Indicator question	Data point	Source	Units
1.	Initial engagement			
1.1	Learning about biodiversity & nature loss			
1.1.1	To what extent are people searching about biodiversity & nature loss?	Yearly average popularity of five nature-loss and biodiversity terms.	EIU Research, Google Trends ¹	Index Value (0-100)
1.1.2	To what extent are people consuming information about biodiversity or nature loss through films, books, or TV shows?	Yearly average popularity of five nature-loss and biodiversity terms in the 'books and movies' category for Google Search.	EIU Research, Google Trends	Index Value (0-100)
1.2	Forming an opinion about biodiversity & nature loss			
1.2.2	What proportion of people are concerned about nature-loss and biodiversity?	% of respondents who see the following as a serious or somewhat serious global problem: <ul style="list-style-type: none"> • Loss of animal and plant species • Single-use plastic waste • Shortages of fresh water • Natural resource depletion • Climate change • Preservation of the environment for future generations 	Globescan	Survey
2.	Individual actions			
2.1	Changing individual behaviour			
2.1.1	To what extent are people willing to change their habits and lifestyle to support nature and biodiversity conservation?	Yearly average popularity of five nature-loss and biodiversity terms in the 'shopping' category for Google Search.	EIU Research, Google Trends	Index Value (0-100)
2.2	Influencing the behaviour of others			
2.2.1	How often are people posting about biodiversity & nature loss on Twitter?	Volume of Twitter posts mentioning at least one nature-loss and biodiversity term by country, by year.	EIU Research, Meltwater ²	#
2.2.2	To what extent are influential people amplifying messages around nature-loss and biodiversity on their platforms?	Combined number of followers of top 20 Twitter accounts posting about nature-loss and biodiversity. (2020 data only) ³	EIU Research, Meltwater	#
3.	Collective actions			
3.1	Leading campaigns and protests			
3.1.1	What is the total number of campaigns relating to nature-loss and biodiversity?	# campaigns for biodiversity and nature by country (2016 – 2020 inclusive)	Avaaz	#
3.2.2	What is the size of campaigns relating to biodiversity & nature loss?	# of signatures for biodiversity and nature – related campaigns by country (2016 – 2020 inclusive)	Avaaz	#
3.1.3	To what extent are people donating to nature-loss & biodiversity campaigns?	# of donations to biodiversity and nature – related campaigns by country (2016 – 2020 inclusive)	Avaaz	#
3.2	News media engagement			

¹ Google Trends is a tool created by Google that analyses the popularity of top search queries in Google Search across various regions and languages.

² Meltwater is a software company that monitors coverage across both news and social media.

³ See 'Data Limitations' section for more detail

3.2.1	To what extent is the news-media covering nature-loss and biodiversity issues broadly?	# of articles mentioning at least 1 biodiversity & nature-loss term by country, by year.	EIU Research, Meltwater	#
3.2.2	To what extent is the news-media covering nature-loss and biodiversity protests?	# of articles mentioning at least 1 biodiversity & nature-loss protest term by country, by year.	EIU Research, Meltwater	#

4. Search term development

The foundation of this programme is based on a set of search terms, or key words, that have been used to measure awareness, engagement and action for nature. Search terms were developed based on the following steps:

- Consultation with WWF: WWF provided a set of search terms that had been used previously, based both on inputs from members of their organisation, as well as their list of 'flagship' species.
- Literature review: The EIU conducted an independent literature review to understand how experts and non-experts alike were talking about nature-loss and biodiversity-loss in different regions around the world.
- Testing with Meltwater: The long-list of search terms was then tested by Meltwater in order to assess the level of 'noise' associated with each (i.e., those terms that could refer to more than one concept such as 'Jaguar' the animal and 'jaguar' the car). This helped ensure that the data points collected based on those search terms did not accidentally reflect non-relevant conversations.

The final set of search terms were broken into four categories (see below). These categories capture a **broader set of issues relating to biodiversity and nature loss**, allowing The EIU to identify and measure a wider range of conversations. They also focus on issues that are **understood and referenced by both a technical and non-technical audience**. A non-expert may post about a specific animal or species without using terms such as 'biodiversity' or 'nature-loss' and this list provides an opportunity to capture non-expert conversations.

1. Biodiversity & nature loss
2. Drivers of biodiversity & nature loss
3. Flagship species
4. Nature conservation & restoration

Search Term Categories

- **Biodiversity & nature-loss**

As the first layer of enquiry, we focussed on core terms related to the fundamental concept we were measuring: biodiversity & nature-loss. These terms include:

Loss of	Decline of	Other
biodiversity	nature	endangered species
nature	wildlife	nature based solutions
wildlife	species	
species	habitat	
habitat	biodiversity	

- **Drivers of nature-loss**

According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES 2019) the key drivers of nature-loss fall into two categories: indirect and direct drivers. Indirect drivers include an increase in population and per capita consumption; technological innovation; and issues of governance and accountability. Direct drivers include specific impacts on biodiversity that result directly from human activity. For the sake of this assessment we focused on the direct drivers of biodiversity loss, including:

- Changes in land & sea use
- Direct exploitation of organisms and resources
- Climate change (natural disasters)
- Pollution
- Invasive species

An indicative list of search terms is outlined below.

2.1 Changes in land & sea use: The impact of expanding agricultural and urban environments, leading to degradation, devastation, depletion and fragmentation of natural habitats. Search terms included:

Degradation of -	Other
land	loss of forests
soil	water acidification
water	soil acidification
wetlands	deforestation
mangroves	over farming

2.2 Direct exploitation of organisms and resources: The extraction of living biomass and non-living materials. Search terms included:

Over -	Other
harvesting	resource exploitation
fishing	illegal wildlife trade
hunting	logging
	mining
	poaching
	resource extraction

2.3 Climate change (natural disasters): A complex and major driver of change in nature, climate change alters ecosystems, disrupts food production and water supply, and negatively impacts livelihoods (CBD UN, 2016). Search terms included:

Other	
desertification	rising sea levels
floods	ice-cap melting
coral bleaching	droughts
bushfires / wildfires	

2.4 Pollution: This driver includes all emissions into the atmosphere, water bodies, and terrestrial systems from industrial activities and households. Search terms included:

- pollution	Other
water	haze
soil	micro plastics
air	dead-zones
plastic	oil spills

2.5 Invasive alien species: This driver refers to species that threaten native ecosystems and have been known to contribute to almost 40% of animal extinctions globally⁴. Search terms included:

- species	Other
Alien	non-natural predators
Invasive	ecological devastation
Native	altered food chains
Non-native	

3. Flagship species: Monitoring the health and diversity of species globally is a key way we can measure the extent of nature-loss. However, when it comes to engaging people on the nature-loss crisis, not all species are created equal. People are more likely to fight for a panda's bamboo forest than mobilize in protection of a coral plankton - even though both are important to their ecosystems. To help capture engagement on specific species, we narrowed our list to what is known as Flagship species⁵ (Simberloff, 1998) or those species that are normally used by NGOs in advocacy and funding campaigns. Search terms included:

Asia (incl. Australia & NZ)	Arctic / Antarctic	Africa	Europe	Latin America	North America
Panda	Blue whale	Lion	Grey wolf	Sloth	Beaver

⁴ <https://www.cbd.int/ldb/2009/about/what/>

⁵ "A flagship species, normally a charismatic large vertebrate, is one that can be used to anchor a conservation campaign because it arouses public interest and sympathy" (Simberloff, 1998)

Tiger	Seal	Rhino	Badger	Giant turtle	Bison
Elephant	Humpback whale	Cheetah	Red squirrel	Golden Lion Tamarin	Grizzly bear
Orangutan	Emperor penguin	Leopard	Otter	Macaw	Bald eagle
Koala	Polar bear	Gorilla	Hawk	Jaguar	Moose
Brown Kiwi					
Platypus					
Kangaroo					
Wombat					
Snow leopard					

4. Nature conservation & restoration: Lastly, we focussed on those terms that represent activities in *support* of nature conservation and biodiversity. These include social movements, advocacy campaigns as well as other types of activities. Search terms included:

Activities	Campaigns
Nature restoration	Earth hour
Nature conservation	Extinction rebellion
Community-based conservation	Earthday
Sustainable farming	Trillion tree campaign
Sustainable fishing	New Deal for Nature
Nature rehabilitation	
Reforestation	

For the full list of search-terms used and the translation of these terms, please email antoniakerle@eiu.com

5. Countries & languages

This programme measures awareness, engagement and action for nature in 54 countries. The country choice reflects a mix of high-income, middle-income and low-income countries with geographic representation. The countries represent over 80% of the world's population. The countries fit into the following income groups, as defined by the World Bank.

High income economies: > 12,535 GNI per head

Upper-middle income economies: 4,046 – 12,535 GNI per head

Lower-middle income economies: 1,036 – 4,045 GNI per head

Low-income economies: < 1,036 GNI per head

Region	Country	Income Level	Language
Asia - Pacific	Australia	High	English
	Bangladesh	Lower-middle	Bengali
	China	Upper-middle	Chinese (Simplified)
	India	Lower-middle	Hindi, English
	Indonesia	Upper-middle	Bahasa Indonesia, English
	Japan	High	Japanese
	Malaysia	Upper-middle	Malay
	Nepal	Lower-middle	Nepali
	Pakistan	Lower-middle	Urdu, English
	Philippines	Lower-middle	Tagalog, English
	South Korea	High	Korean
	Taiwan	High	Chinese (Traditional)
	Thailand	Upper-middle	Thai
	Vietnam	Lower-middle	Vietnamese
Europe	Denmark	High	Danish, English
	France	High	French
	Germany	High	German
	Italy	High	Italian
	Netherlands	High	Dutch, English
	Norway	High	Norwegian, English
	Poland	High	Polish
	Russia	Upper-middle	Russian
	Spain	High	Spanish
	Sweden	High	Swedish, English
	United Kingdom	High	English
	Ukraine	Lower-middle	Ukrainian
Latin America	Argentina	Upper-middle	Spanish
	Bolivia	Lower-middle	Spanish
	Brazil	Upper-middle	Portuguese
	Chile	Upper-middle	Spanish
	Colombia	Upper-middle	Spanish
	Costa-Rica	Upper-middle	Spanish
	Ecuador	Upper-middle	Spanish
	Mexico	Upper-middle	Spanish
	Peru	Upper-middle	Spanish
	Venezuela	Upper-middle	Spanish
North America	Canada	High	English
	United States of America	High	English
Middle-East & North Africa	Algeria	Lower-middle	Arabic
	Egypt	Lower-middle	Arabic
	Jordan	Upper-middle	Arabic
	Morocco	Lower-middle	Arabic

Sub-Saharan Africa	Saudi-Arabia	High	Arabic
	Turkey	Upper-middle	Turkish
	Angola	Lower-middle	English
	Congo (Democratic Republic Of.)	Low	French
	Ghana	Lower-middle	English
	Kenya	Lower-middle	English
	Madagascar	Low	French
	Nigeria	Lower-middle	English
	South Africa	Upper-middle	English
	Tanzania	Lower-middle	English

6. Technical Note

Data gathering and analysis

Google Trends (GT):

Google Trends is a tool that measures search requests made on Google's platform. The tool showcases interest in a specific topic from a global level, down to the city level. Google trends does not share the **volume** of searches (e.g., how many times someone typed in a search request) but instead provides data on the popularity or interest level around a specific term.

Normalisation

Google Trends normalises their search data in order to make comparisons between terms easier by taking the following steps⁶:

1. Each data point is divided by the total number of searches of the geography and time range it represents to compare relative popularity.
2. These numbers are then scaled on a range of 0-100 based on a topic's proportion to all searches on all topics.
3. This means that different regions that show the same search interest for a term may not have the same total volume.

Identifying Biodiversity & Nature Loss Terms

Google Trends was used to evaluate the popularity of *five* search terms by country and by language. Five search terms of relatively equal popularity had to be chosen. If one popular term (e.g., biodiversity) was compared to a less popular term (e.g., dead-zones), then Google Trends would return an error.

The EIU ran tests on every word in the list of search terms (see section 4). We then selected the five most *comparatively* popular terms upon which to base our analysis.

Data collection

We developed an API in order to gather Google trends data for each country in the study in both English and the local language for all five terms. Data was gathered on a weekly basis from 03/01/2016 to 25/10/2020. We gathered data across different Google search categories including:

- All / General
- Shopping
- Arts & Entertainment
- Books & Literature

Data analysis

Google Trends data was analysed using a model which can be found at eiuuperspectives.economist.com/ecowakening.

In order to establish trends over time The EIU calculated % changes in the Google Trends Index Value for the five search terms (collectively) from the first year in the study (2016) and the last (2020).

⁶ <https://support.google.com/trends/answer/4365533?hl=en>

In some instances, a yearly average was calculated before evaluating percentage change. The two approaches that were used to calculate % change are outlined below.

- % change between the Index Value in the first year (2016) and the last year (2020) using the % change formula: $[(V2-V1)/V1]*100$.
- % change between the Index Value in the first week of 2016 compared to the last week of 2020 using the % change formula: $[(V2-V1)/V1]*100$.

Twitter

The EIU used the Meltwater platform to access historical and 2020 data on social media posts relating to nature-loss and biodiversity loss. The social media platform used in this case was Twitter. Unlike Google Trends, The EIU was able to calculate the volume of Twitter posts for the majority of search terms in the study. If a post contains more than one mention of the search terms, it is still counted only once to prevent double counting.

Twitter Data - 2016 - 2019

Meltwater was only able to provide a maximum of 20,000 data points per day for Tweets posted between 2016 and 2019. This meant that The EIU had to work with Meltwater to test each of the terms and remove the three most popular in order to return data that was *below* the 20,000 post limit. This set of terms is called the 'reduced term set'. Weekly and annual totals were then calculated from January 2016 - December 2019.

Twitter Data - 2020

The EIU then used the Meltwater platform to download Twitter data for the same set of search terms for 2020. We compared that dataset with another that included *all* search terms (including the three most popular) which was called the 'full-term set'. An adjustment factor was calculated for each country as the ratio of the number of 2020 tweets matching the full term set to the number of 2020 tweets matching the reduced term set. This adjustment factor has been applied to the 2016-2019 tweet counts to approximate the number of tweets matching the full term set.

Percentage change was calculated between the first year (2016) and the last year (2020) using the % change formula: $[(V2-V1)/V1]*100$.

News Media:

Meltwater has data on news-media coverage going back 10 years. In order to gather data on news media coverage, we were able to pull directly from the Meltwater platform. Like the volume of Twitter posts, if an article contains more than one mention of the search terms, it is still counted only once to prevent double counting.

The Meltwater platform uses self-developed open web crawlers to monitor an expansive, pre-configured global online source base of about 350,000 news sites and it integrates millions of editorial documents per day. The platform differentiates news sources from other sources through the website's self-determined coding.

Data collection

Using the full set of search terms, data on news-media coverage was collected for each year and for each country and language in the study. Data was collected for the period January 2016 to October 2020. Total number of articles for 2020 has been increased by 20% to include a simple estimate for November / December.

A narrower list of 'protest terms' was used to calculate the Meltwater (Protest) figures (Indicator 3.2.2) – although the approach to data collection was the same.

Data Analysis

News media data has been analysed in a variety of ways in the workbook. Figures for growth in news-media used in the report either reflect a simple Compound Annual Growth Rate (CAGR) OR % change between the first year (2016) and the last year (2020) using the % change formula: $[(V2-V1)/V1]*100$.

7. Data limitations

Our quantitative estimates for global engagement, awareness and action for nature reflect a strong upward trend. Odds are the trend is even greater than what we have found in this research programme, due in part to the following factors:

Languages

While we aimed to collect data in as many languages as possible, given time and budget constraints, some languages have been left out of the analysis. In countries like Indonesia, conversations in local languages (e.g., Balinese or Javanese) would not have been captured in this research.

Twitter / Google Trends

We were unable to access historical Twitter data above 20,000 mentions per day. This means that we had to eliminate some of the most popular terms from the dataset – effectively reducing the total volume of Tweets from 2016-2019. While we were still able to see trends, it is likely that the true volume during this period would be higher than what we have identified.

Additionally, we were unable to access historical data for other social media sites (including Instagram and Facebook), so we have had to rely on Twitter as the source for this analysis. This means that we were unable to capture engagement on these platforms. Similarly, we were unable to access social-media data from the major Chinese platforms (e.g., We Chat).

Finally, in some instances access to Twitter and Google is restricted by governments. In the case of China, there are a number of people who post in Chinese or from China using a VPN – which has been captured – but the data we have collected likely does not reflect the true level of engagement and awareness on the ground. The same can be said for other countries that use search platforms other than Google (e.g., Yandex in Russia).

Search Terms

We made every effort to be as comprehensive as possible with the Search Terms; however, the universe of terms relating to nature-loss and biodiversity is almost infinite. Inevitably, this means that certain terms were not used in our analysis –the inclusion of which could likely increase the volumes we have identified already.

Offline Engagement

In many instances groups are organising and mobilising on behalf of nature *offline* using a variety of tools. This includes groups who do not have adequate access to the Internet, limited time to use social media platforms, or use alternative forms of community organising. These kinds of activities could include mobilisation using word-of-mouth, telephone (SMS) or radio, as well as activities such as educational initiatives, art and theatre. Our data sources have not allowed us to capture these types of behaviours.