Digital pollution:
An assessment of the impact of influencer marketing

March 2023

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FOREWORD

In a world where social networks play a big role in dictating mass behaviors, influencers have enormous power: the ability to quickly change and redefine social and consumption norms.

This potential is recognized by brands, as influencer marketing has made its way to the forefront of marketing investments and we are increasingly seeing brands shift focus to influencer marketing to propel their brand growth on social media. In 2022, the industry was worth 27.51 billion dollars (Traackr, 2023).

Yet their influence potential transcends boundaries, from commercial consumption to politics and education. As such, influencers have a unique place in today's society and a great capacity for mobilizing crowds and driving change. This means that in the context of the climate crisis, they can be a tremendous part of either the problem or the solution.

The topic of this study was born at the intersection of several trending fields of research from the last few years.

On one hand, more and more attention is being paid to the realization that our digital efforts have a carbon impact: from our IT infrastructures to our brand websites and digital media campaigns.

The introduction of the "Contrats Climat" in France in July 2022 is a powerful first example of what we can expect to be a set of legislations to regulate the carbon impact of digital efforts across the digital advertising value chain. Central to these efforts to adapt advertising practices to the current climate crisis is the conviction that advertising is a powerful vehicle to drive change.

> "Influencers have a unique place in today's society and a great capacity for mobilizing crowds and driving change"

FOREWORD

On the other hand, influencers have been increasingly criticized in recent years and months on their environmental impact, whether direct (i.e. through their personal travels and consumption habits) or indirect (i.e. through the consumption behaviors they encourage). However, an aspect that has not yet been addressed is that of the pollution generated by their core business: creating and publishing content on social networks to generate engagement. This is referred to as digital pollution, meaning the carbon footprint generated by viewing video (or non-video) content on platforms such as Instagram, YouTube, TikTok, Twitch, Pinterest, etc.

In this study, we will see that at the intersection of these two topics, there is a pressing urgency to measure and incorporate the environmental impacts of influencer marketing in both our carbon measurement framework and marketing plans.

PURPOSE OF THE STUDY

UNVEILING THE IMPORTANCE OF
ACCOUNTING FOR DIGITAL CLIMATE IMPACTS

In this study, our primary objective is to draw attention to the very tangible impact of the pollution generated by influencers' digital activity, well beyond their physical footprint. We will, for the first time, focus on the environmental impact associated with the activity on social networks of influencers, content creators, and generally speaking, people who gather and influence a large online community, especially through collaborations (whether or not they are paid).

By doing this, this study hopes to make its case on several points:

From an advertiser standpoint

That influencer amplification should be included when measuring the carbon footprint of digital activity, and that driving the sustainable influence movement can be a key business opportunity for brands.

From an influencer standpoint

To raise awareness of the fact that the impact of their digital activity outweighs by a lot their physical footprint, and that the technology now exists to start measuring this and lead the way to reduction.

From an end user and follower standpoint

That there are actionable steps we can collectively take when consuming content on social media to mitigate our impact on the environment.

ABOUT FOOTSPRINT

By combining digital, technological and environmental expertise, Footsprint helps companies reduce their carbon emissions through the development and deployment of responsible and sustainable digital strategies.

Footsprint is a digital agency dedicated to digital sustainability, part of the Labelium Group , an international media group specializing in digital performance.
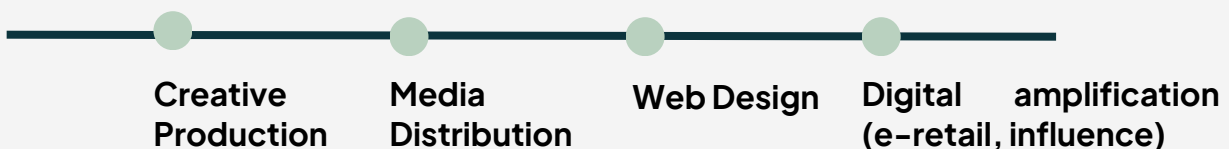
The agency's mission is to guide its clients towards digital sobriety by deploying sustainable and performant strategies throughout the digital value chain. The panel of services is based on methodologies derived from the latest research.

The Footsprint team consists of seasoned experts in digital performance and environmental sciences, who work at the crossroads of these sciences to enable their clients to build strategies with a strong business and environmental performance mindset.

For more information: footsprint.co
Contact us at: solutions@footsprint.agency

Discover our services

Measurement and reduction of emissions throughout the digital value chain through audits, reduction programs, and custom training.

Creative Production — Media Distribution — Web Design — Digital amplification (e-retail, influence)

ABOUT 1000HEADS

Data-driven Social Transformation™

The Social Age presents a myriad of complex new communication challenges. Brands are being held to higher standards of humanness than ever before. That means being good listeners and being in the moment. It means being empathetic, conversational, authentic, and interesting. All this requires a fundamental communications shift—a transformation of priorities, competencies, processes, and activities.

1000heads is working with some of the world's best-known brands as a global strategic partner, building dedicated cross-functional teams that deliver Social Transformation™ to the enterprise. Some of their clients include Google, Netflix, The North Face, and Nestlé, to name a few.

For twenty years and counting, 1000heads services have helped brands all over the world transform and adapt to rapid, continual shifts in media, culture, and technology.

For more information: 1000heads.com
Contact us at: info@1000heads.com

Discover our services

● **Data & Analytics**
Social listening, performance reporting, data science & machine learning

● **Conversational Creative**
Content & production, integrated campaigns, media planning

● **Strategy & Implementation Design**
Social-first strategy development, workflows & governance, tools & technology

● **Digital Neighborhoods**
Advocacy, influence & community

ABOUT THE AUTHORS

Elisa Boivin
Managing Director
at footsprint

Elisa joined the global performance agency Labelium 8 years ago. As a Media Director and later Program Director for the Americas region, she oversaw large international accounts across the Luxury, Fashion and Retail sectors. In her latest role as the ESG Director for the region, she founded Footsprint, a pioneering sustainability division of Labelium dedicated to decarbonizing the digital industry.

Juan Sotés
Impact Measurement Director
at footsprint

Throughout his more than 10 years of experience in environmental sciences and global warming, Juan has worked in both private and public sectors, and more specifically for the Toronto Atmospheric Fund as carbon and co-benefits analyst. He joined footsprint in order to help the industry accelerate the transition towards digital sobriety. His expertise in carbon measurement and GHG protocols will contribute to develop and strengthen industry frameworks.

Sally Jacquet
Digital Sustainability
Consultant at footsprint

As a Digital Sustainability Consultant at footsprint, Sally builds strategic recommendations across brands' full digital advertising value chain to help reduce carbon emissions while boosting media performances. In her previous experience both on the agency and advertiser side, she has implemented and managed social media strategy including influencer and paid media management at global level. She earned a certification in Digital Sustainability by the French Institute for Sustainable IT (INR).

KEY CONTRIBUTORS

Joel Diamond
Client Strategy Director
at 1000heads

Joel works with clients right through their Social Transformation journey, all the way from developing strategy to creative concept development, to implementation design. He has been with 1000heads for over a decade and has worked across a breadth of categories from B2B technology through to FMCG brands.

Rosie Dickens
Group Insights Director
at 1000heads

Rosie heads up the Insight function at 1000heads London, a data-hungry division of social analytics experts, delivering powerful stories to clients through digital metrics, consumer behaviours and social media trends. Rosie's role is centred on devising custom macro metrics for clients to speak to their business objectives, tailored measurement frameworks to showcase the social transformation and in-depth social listening to inspire creative strategies.

Frank Grindrod
Managing Director
at 1000heads

Managing Director of 1000heads UK/EU, Frank has spent the past 15 years at the agency. Frank has helped to secure and grow global partnerships with some of the world's biggest brands, leading transformational strategies that make our clients relevant, conversational and advocated in a highly complex media landscape.

EXECUTIVE SUMMARY

Digital pollution:
An assessment of the impact of
influencer marketing

footsprint.
avec 1000 heads
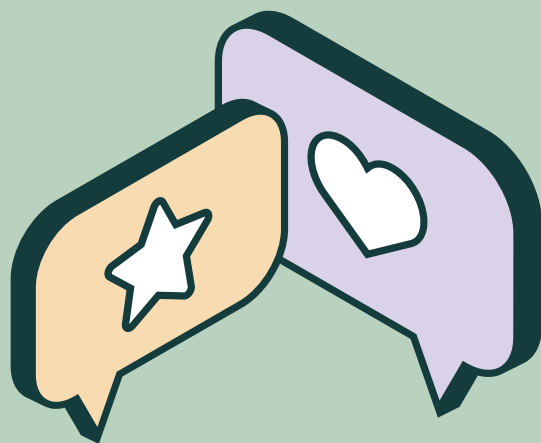
489

Paris-NYC round trips per year

Does it sound like **A LOT** ?

IT IS THE EQUIVALENT OF
THE DIGITAL CARBON FOOTPRINT
OF **CLARA**

Clara is an INFLUENCER

She creates and posts content on social media for her community and acts as a brand ambassador for major brands.

3M

followers

YOUTUBE
INSTAGRAM
TIKTOK

1072

tons of CO$_2$e

have been generated <u>in a year</u> by the publication and viewing of her social media posts.

USERS
by having a **less energy-intensive use** of social media
like using WiFi only, minding the resolution when streaming videos

INFLUENCERS
by adopting **sustainable best practices** when posting
minding the length and compressing files are good examples

HOW TO ACT?
Reducing Clara's carbon footprint: a collective responsibility

FOR EXAMPLE →

BRANDS AND AGENCIES
by integrating influencer marketing into **their carbon assessment** and reduction objectives

EXECUTIVE SUMMARY

For the purpose of this study, we have established a typical influencer profile of a French influencer, based on public data of existing profiles. It is to be noted that several influencers have been contacted and have declined to answer or take an active part in the study.

We are therefore introducing "Clara", our anonymous top French influencer followed by over 3 million people on Youtube, TikTok and Instagram. Based on our methodology (see details in the methodology section), the carbon impact of Clara's digital publications in a year could reach 1,072 tons of CO_2e, which is the equivalent to more than 481 Paris- New York roundtrips (or 9 per week). And this footprint does not even take into account the viewing of publications from previous years, nor the creative production process.

Given the number of influencers in France and around the world, it is easy to imagine this figure growing exponentially, especially if we add variations related to differences in energy grids. For example, the same minute of content viewed in the United States can generate up to 5 times more emissions on average because the proportion of fossil fuels in the energy mix is higher than in France.

The next few sections of this study will walk you through the details of Clara's digital carbon footprint, from where emissions come from to how we can mitigate the impact. We will identify the challenges and opportunities unveiled by this study for all the stakeholders, from influencers to brands, end-users or even the platforms.
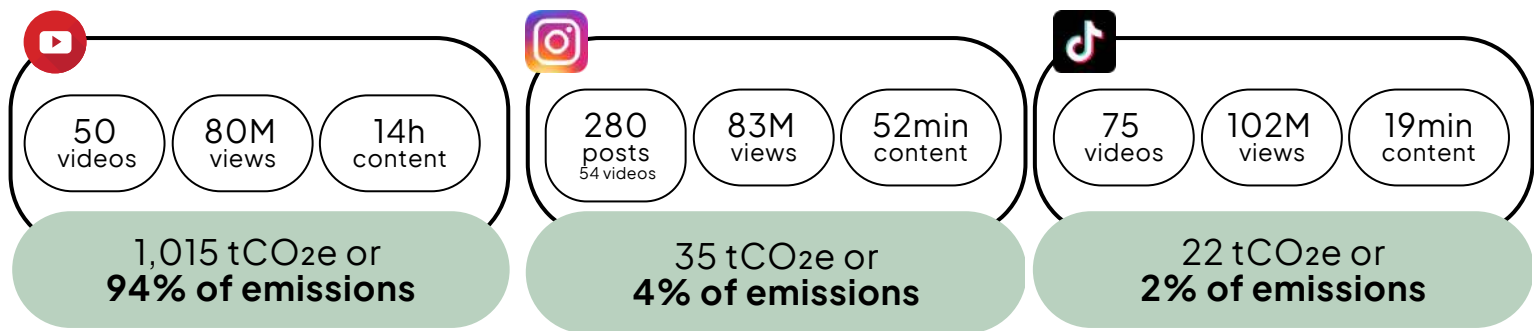
For any questions or contributions, please contact solutions@footsprint.agency.

EXECUTIVE SUMMARY

Breaking down the analysis of Clara's digital carbon footprint.

The first part of this report aims to provide insights into the measurement method and the distribution of emissions, and to identify reduction opportunities to mitigate the impact.

Where do these 1,072 tons come from?

50 videos	**80M** views	**14h** content

1,015 tCO₂e or 94% of emissions

280 posts 54 videos	**83M** views	**52min** content

35 tCO₂e or 4% of emissions

75 videos	**102M** views	**19min** content

22 tCO₂e or 2% of emissions

Platform breakdown

If we look at the breakdown in detail, 1,015 tons (94%) come from video views on YouTube, 4% of the emissions come from Instagram, and only 2% come from TikTok.

The main explanation behind this distribution lies in the fact that the longer a video is, the more data is transferred from the servers, leading to a proportional energy consumption. With a similar audience volume, a platform like YouTube, where the average video length is around 17 minutes compared to 21 seconds on TikTok (Table 2), will have a heavier contribution.

PLATFORM	CONTENT		PERFORMANCES		IMPACT
	TYPE	NB OF POSTS PER YEAR	EST. IMPRESSIONS IN MILLIONS	VIEWS IN MILLIONS	TONS OF CO2E TOTAL PER YEAR
Instagram	Video	54	-	83	32
	Image	85	93	-	0.3
	Carousel 2-10 images	140	154	-	2.1
Youtube	Video	50	-	75	1,015
Tiktok	Video	76	-	102	22
					1,072

Table 1.
Overview of content, impression and emission distribution by platform.

PLATFORM	CONTENT		PERFORMANCES		
	NB OF VIDEOS POSTED PER YEAR	AVERAGE LENGTH PER POST	VIEWS IN MILLIONS	TOTAL WATCHING TIME BASED ON TOTAL VIEWS + AVG. VTR YEARS	TOTAL DATA TRANSFERED TOTAL IN GB (VIDEOS + IMAGES)
Instagram	54	58 s	83	91	1,665,060
Youtube	50	17 min	75	2,070	34,014,400
Tiktok	76	21 s	102	56	1,589,148

Table 2.
Average video length per platform, total viewing time, and estimated volume of data transferred.

PART 1

Reducing the digital carbon impact of influencer marketing: a content creator perspective
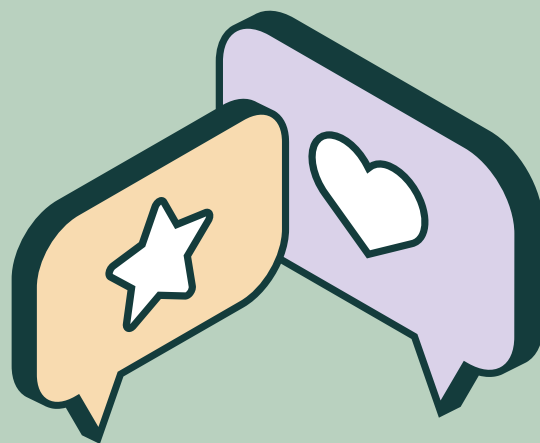
PART 1

The impact of video length.

Why it matters

Video length is a key emission driver: the longer the video, the higher the associated impact. On average, when streaming a video in 720p, 0.42MB are being transferred every second, 25MB per minute, 1.5GB per hour.
Additionally, because of preload, energy will be consumed whether the video is watched for a few seconds, entirely or not at all.

Is shorter, better ?

Shorter videos are better for the environment, but what about performance? In order to determine whether shorter videos are better in terms of views, engagement, and other metrics, global Social Transformation agency 1000heads has looked into organic influencer content performance on social media platforms like Instagram, TikTok, and YouTube. Results show that highest performing videos are on average shorter than Clara's average.

On TikTok and Instagram, videos between 16-20 seconds and 5-10 seconds, respectively, receive more video views than all other video lengths. Longer videos on these platforms drive significantly fewer views than shorter lengths.
On YouTube, the optimum length is at 10-15 minutes, with shorter videos receiving 89% fewer views than the optimum length, which received 5 times greater video views than all other video lengths.

Therefore, a great way to have a significant impact not only on visibility and performance but also on the environment, is to mind the length of videos.

SUMMARY

Optimum video lengths for content creators

10–15 minutes	5–10 seconds	16–20 seconds
Youtube	**Instagram**	**TikTok**

Source: 1000heads internal benchmarks, 2022 / 2023

PART 1

Optimizing for business & ecological performance: an estimation of Clara's reduction potential

If Clara had followed the above-mentioned length best practices to maximize her organic performances, we have estimated her annual carbon emission reduction potential from 12% to 44%.

On Youtube, for example, reducing the average video duration by 7 minutes (from 17 to 10 minutes) would reduce Clara's emissions by 418 tons of CO_2e per year. Similarly, going down to 16 seconds on TikTok (versus 21) would reduce Clara's yearly carbon emissions by 5.2 tons.

Looking at the graph below, even looking at the more conservative scenario (Scenario 2), Clara would reduce her annual carbon emissions by 150 tons, the equivalent of around 75 Paris - New York flights!

Over 5 years, if we estimate Clara's audience growth of about 10% per year, 2,312 tons could be avoided (chart 1).

Table 3.
Visualization of the impact of reducing the average content duration per platform.

PLATFORM	AVERAGE LENGTH PER VIDEO POST	INTERVENTION: SCENARIO 1		INTERVENTION: SCENARIO 2	
		NEW AVERAGE VIDEO LENGTH	% OF EMISSION REDUCTION POTENTIAL	NEW AVERAGE VIDEO LENGTH	% OF EMISSION REDUCTION POTENTIAL
Youtube	17 min	10 min	41%	15 min	12%
Instagram	58 s	5 s	91%	10 s	83%
TikTok	21 s	16 s	24%	20 s	5%
Clara's total emissions reduction potential (in tCO2e)		454		150	
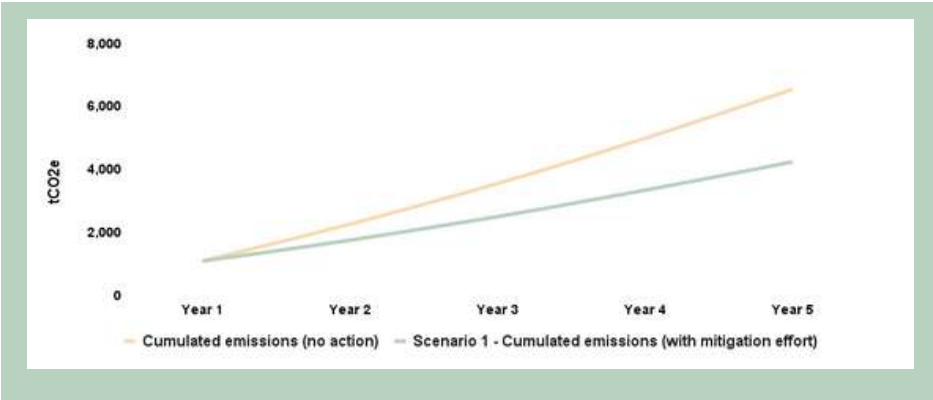
Graph 1.
Evolution graph of Clara's emissions over 5 years, estimating a 10% annual growth in her audience, with and without the interventions in Table 3, scenario 1.

PART 1

The impact of video compression.

Why it matters

If the impact of file compression on each platform is still relatively uncertain today due to a lack of reliable sources, it is estimated that reducing resolution is an effective action to reduce the amount of data stored and transferred and therefore the impact of servers and telecommunications networks.

As a reference, it is estimated that a video posted in 480p will generate 80% less emissions than in 1080p. Even in 720p versus 1080p, the impact remains 50% lower. On the other hand, viewing in 4K will multiply by 4 the amount of data transferred.

Estimated carbon impact for video ad in France based on the level of video compression.	480P **84** kgCO₂e	720P **252** kgCO₂e	1080P **498** kgCO₂e	4K **2.3K** kgCO₂e

## What is the impact on quality?

Today the standard resolution is 1080p, yet to the naked eye there is such thing as too many pixels. On mobile, for example, Steve Jobs once mentioned that the "magic number is right around 300 pixels per inch, that when you hold something around... 10 to 12 inches away from your eyes, is the limit of the human retina to differentiate the pixels" (PCWorld, 2020). On platforms like TikTok, where content is almost exclusively consumed on mobile, a 480p definition is sufficient and does not impact quality.

On desktop, 720p has been widely accepted as the best streaming resolution for live quality video (Dacast, 2022), for multiple reasons. First, it allows for smooth content delivery (or speed) while ensuring high video quality. Additionally, there is little to no difference between 720p and 1080p for small to mid size screens including desktops. Video content creators are therefore able to deliver high-end looking content even with limited bandwidth. Many leading streaming platforms, such as French Group Canal+, propose 720p as the default recommended desktop setting.

In the ongoing race for higher definition, it can be easy to switch to the highest available resolution format. However, we need to keep in mind that we make a significant tradeoff in terms of required bandwidth and data transfer, often with no real gains in perceived quality.

PART 2

Reducing the digital carbon impact of influencer marketing: a look at paid content
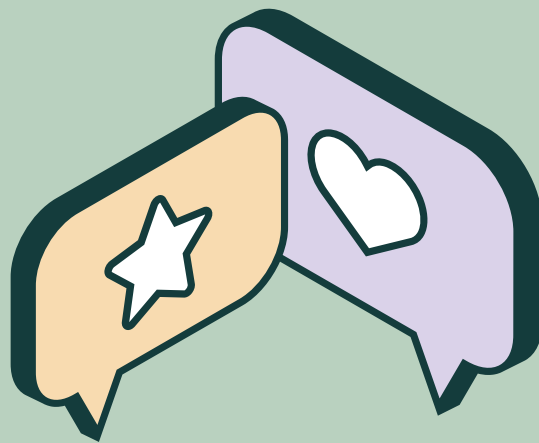
PART 2

Towards a unified media & influence approach

The influencer industry is currently estimated to be worth over $27 billion, as most brands are leveraging influencer marketing which has now become an integral part of marketing and communication strategies. The growing demand for authenticity is increasingly intertwining media & influencer budgets to create more engaging ads, replacing sponsored posts with co-created content dedicated to advertising. Below are a few best practices easily implementable by brands when incorporating influencer content in their media strategies.

The importance of matching video length with actual view-time.

Why it matters

According to a 2021 Microsoft study, the attention average span has dropped to 8 seconds. While longer content can still be a great place for storytelling from an organic perspective (see recommendations page 11), in advertising, short and impactful content is king for performances.

The carbon impact of video waste (i.e. long videos that consumers do not watch entirely) can be very tangible for our digital campaigns. Because of preload, there is a significant difference in terms of carbon impact when watching 6s of a 6-second ad, as opposed to watching 6s of a 30-second ad. The graph below highlights that in the latter case, for the same amount of video consumed, emissions for the ad increase by 112%, with 52% of these emissions generated by the pre-loading of the video.
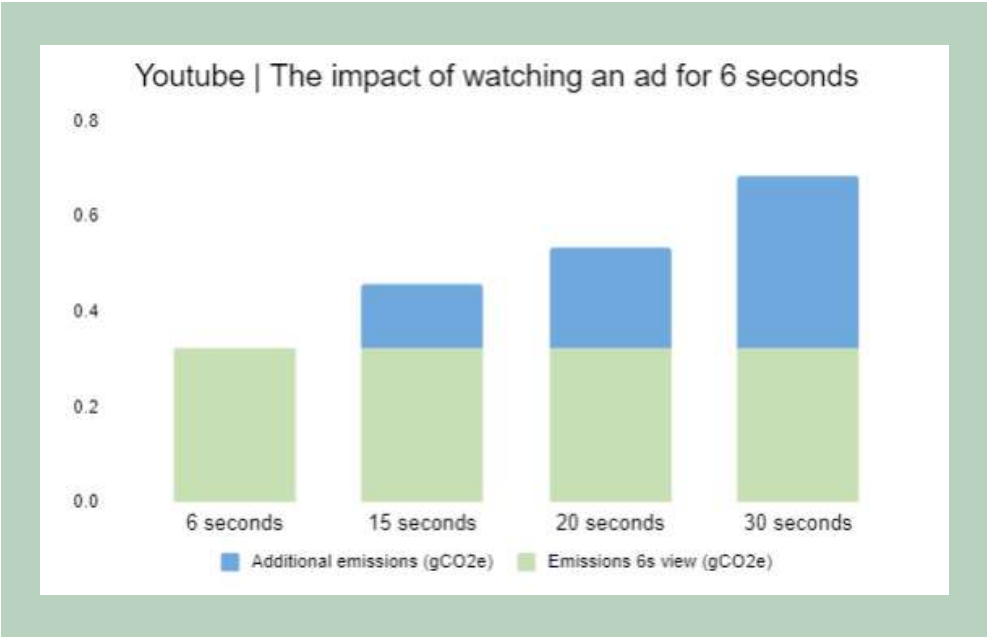

Table 5.
Visualization of the impact of watching 6s of an ad based on ad length.

Source: footsprint, internal benchmarks, 2022 / 2023

PART 2

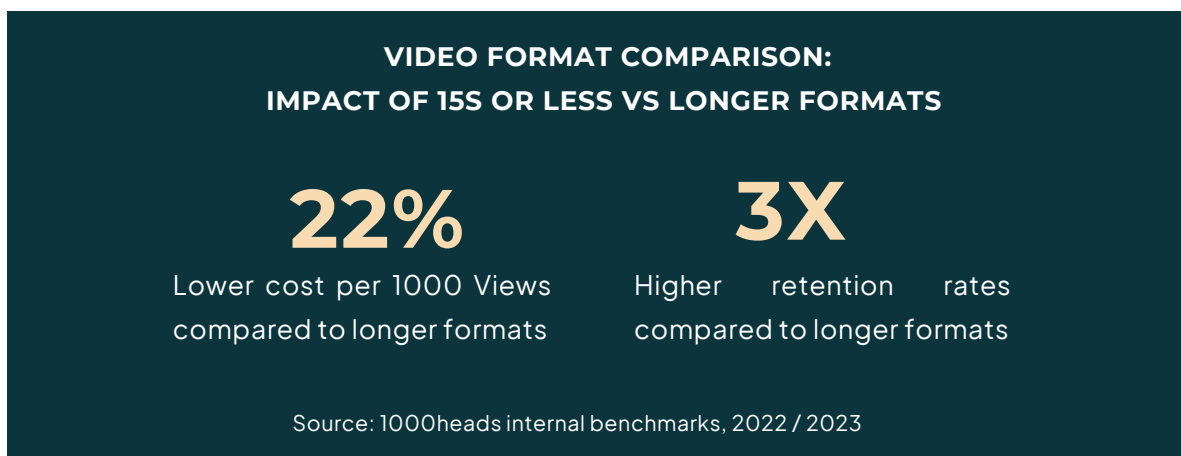## Content repurposing: prolonging content shelf life and maximizing media performances

When a compelling influencer piece of content is showing signs of success, creative repurposing can be a great way to amplify the content and boost visibility, while incorporating digital sustainability advertising best practices.

Creative adaptation to meet advertising best practices can take many forms, a few examples of which include:

- Basic repurposing: e.g. dividing a 45-second ad into 3 compelling 15-second ads with clear calls to action adapted to different stages of the consumer journey, and designed for impact in the first 3 seconds. Leveraging ad sequencing of these high-impact formats will maximize viewability and ad recall while minimizing emissions linked to wasted impressions.

- Native repurposing: creating a new piece of content out of one or several UGC assets

- Branded repurposing: creating a new piece of content incorporating UGC with branded materials (videos or only logo, intro or outro cards, etc.)

Integrated creative repurposing wherever possible in brands' media strategies is an effective way to unleash the full potential of a creative piece while minimizing production costs (thus production emissions) as well as carbon emissions linked to advertising distribution.

Below are some compelling numbers to highlight the importance of short, impactful content when looking at paid content on social media.
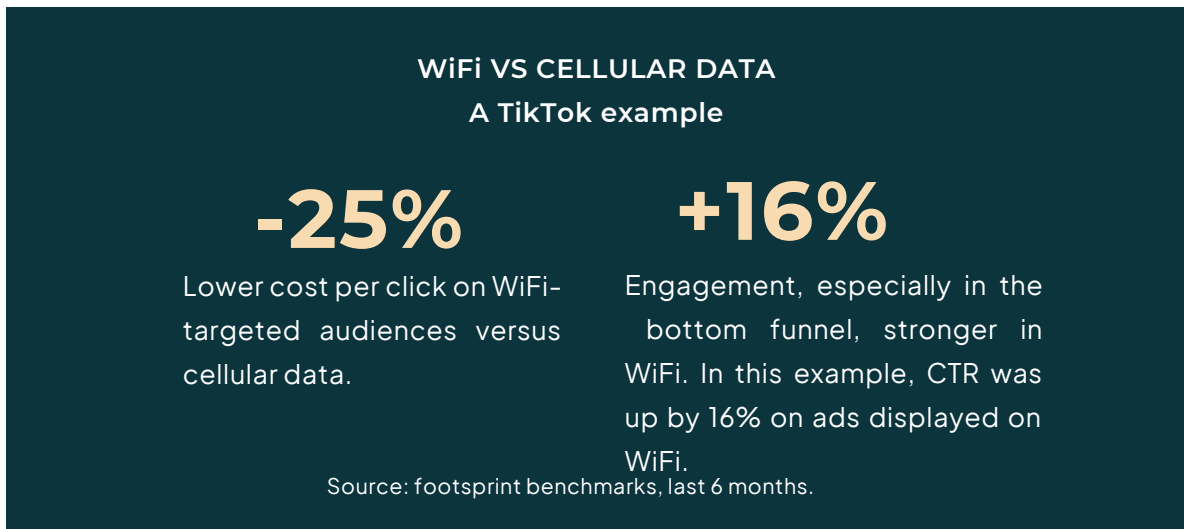

VIDEO FORMAT COMPARISON:
IMPACT OF 15S OR LESS VS LONGER FORMATS

22%
Lower cost per 1000 Views compared to longer formats

3X
Higher retention rates compared to longer formats

Source: 1000heads internal benchmarks, 2022 / 2023

PART 2

Mind the connection type.

Why it matters

On average, cellular data is about 5 times more energy consuming and carbon intensive than WiFi connection. For many advertisers on Tiktok, our internal benchmarks reveal that WiFi already represents between 80 and 90% of impressions, and tends to drive better performances as consumers are likely in a time and place where they are dedicated to consuming content.
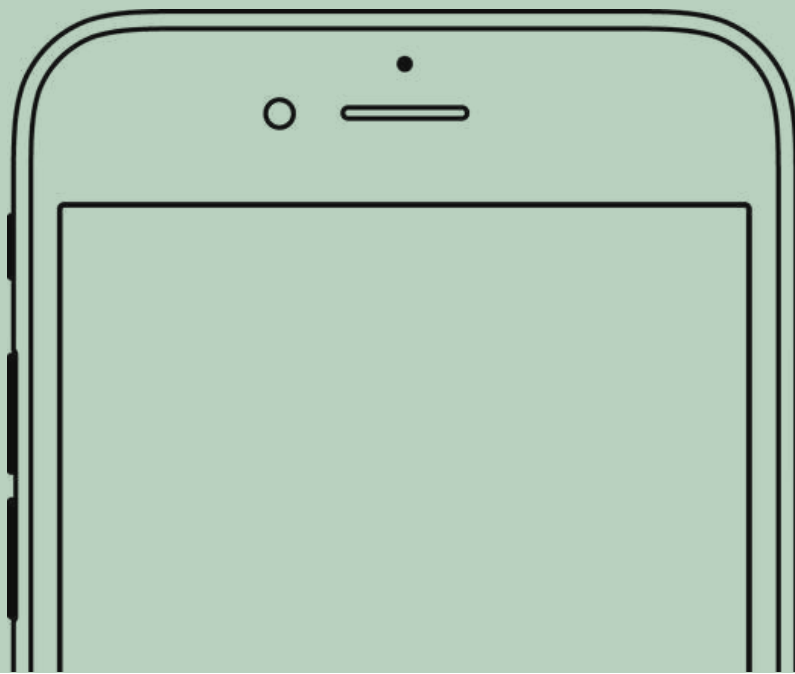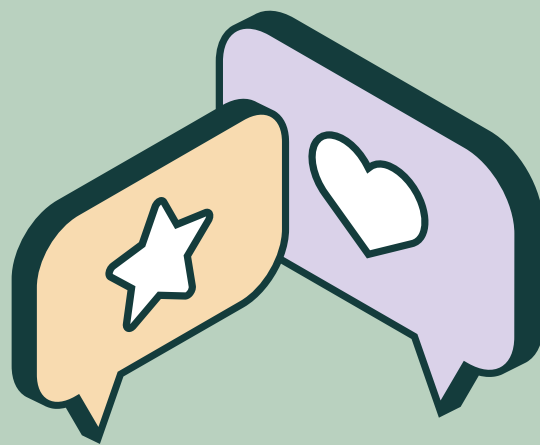
When amplifying influencer content on Tiktok, brands can therefore minimize emissions while maximizing performance by ensuring that their ads are delivered when users are paying the most attention and on a less carbon-intensive connection type.

While connection type optimization or reporting data are still not available on every platform, some - such as Meta - offer the option to A/B test between WiFi-only and other connection types (at the ad-set level).

WiFi VS CELLULAR DATA
A TikTok example

-25%
Lower cost per click on WiFi-targeted audiences versus cellular data.

+16%
Engagement, especially in the bottom funnel, stronger in WiFi. In this example, CTR was up by 16% on ads displayed on WiFi.

Source: footsprint benchmarks, last 6 months.

PART 3

Conclusion: the crucial need for all stakeholders to embark on the change

CONCLUSION

As stated in the last IPCC report, digital can (and needs to) be a part of the solution in the climate challenges we are facing today, mainly because of its power to move the masses. The underlying principle is that everyone needs to embark on this journey, either to facilitate measurement or to promote mindful, climate-positive behaviours. From challenges to opportunities, let's deep dive into what it means for each of our stakeholders.

Responsible influence: from minding one's impact to driving the change.

When extrapolating Clara's data from a year to 10, her (already tangible) carbon footprint becomes significantly heavier. We are no longer talking about Paris - New York trips but about 73 round trips to the moon. Besides, the probability that her audience size remains static is low -to say the least. If we consider this time a 10% yearly audience growth across all platforms, the cumulative footprint over 10 years amounts to more than 17,000 tons of CO_2e...

No doubt we are clearly outweighing physical impacts -even for heavy travellers. That is why it is important to spread awareness on the topic especially among people gathering large communities... The larger the audience, the bigger the responsibility. Measuring impact is a first start, as well as keeping best practices in mind when posting content such as video length and resolution, as mentioned in the first part of the study.

A second key role for influencers is to encourage sustainable behaviors and more conscious use of digital technologies. The way users are streaming and engaging with content has a huge impact on the total carbon footprint (see below section dedicated to user engagement).

What can influencers do about it?

1

A big step is to measure the impact of your work. Our experts are happy to help you track your digital carbon footprint, either through continuous measurement or post-mortem reports.

2

When creating and posting content, keep digital sustainability best practices in mind. Mind the length and resolution!

3

Spread the word within your community and encourage a more mindful use of social media. Inspiring, committed profiles are what people are looking for!

CONCLUSION

What role for brands to play?

As the younger generation is more informed about and committed to environmental sustainability than any previous generation before them, they are looking for brands that align with their values and views on the world. For brands, leveraging influencers has been key in establishing credibility and authenticity with Gen Z.

As micro-influencers are increasingly redefining the rules of the game (91% of all sponsored post engagements in 2020 were created by micro-influencers according to the State of Influence report by Launch Metric), they are also growing more conscientious of paid partnerships and chose to work with brands that truly speak to their values. For brands, this means that supporting influencers in the measurement and reduction of their digital carbon footprint can be a critical way to both establish credibility with consumers and strengthen loyalty amongst their influencer community.

As media and influence are increasingly intertwined, decarbonizing their digital advertising efforts across the full digital value chain will necessarily mean that brands include the impacts of influence. In time, there is no doubt that the climate impacts of both traditional and influence-linked media will have to be measured and included within the scope of digital emissions, and enforced by regulations. We are already seeing early signs of this in France, with the introduction of the "Contrat Climat" in July 2022, and the Observatory for Responsible Influence launched by the ARPP in 2021.

Now is therefore the time to act for brands, to pioneer and lead the sustainable digital influence movement ahead of regulations, in order to secure their relationships with influencers, and reinforce the credibility of their environmental claims.

What can brands do about it?

1 Including digital amplification such as influencer campaigns within the scope of digital emission is key. At footsprint we can help you track the impact of paid partnership but also seeding or UGC activations.
Reach out to our experts at solutions@footsprint.agency

2 Build sustainable-by-design influencer briefs and embark your community in your journey. Incorporating best practices will help mitigate the carbon footprint while maximizing impact and resonance.

CONCLUSION

What role for agencies to play?

As incorporating digital sustainability best practices across all aspects of digital media will soon become a priority and norm, agencies have the responsibility to accompany their clients in this transition. As such, an increasing responsibility for marketing agencies will be to help uncover, encourage and promote sustainability practices across the value chain.

From a creative standpoint, this means leveraging digital sustainability best practices as constraints to unleash agencies' creativity to build for impact, while integrating carbon measurement as a key part of the reporting process.

From an advertising standpoint, agencies will increasingly need to integrate media & influence in a holistic manner,

In addition, when profiling & validating potential influencers to utilise, agencies should consider environmental factors within their identification frameworks, such as the influencers lifestyle, environmental messaging and partnerships with other brands, in order to evaluate the credibility the influencer has within this space.

Platforms as mediators: an urgent need for transparency

Today, most platforms offer possibilities for digital savvy users to reduce their energy consumption, for example by updating video resolution on YouTube or using a "low data" mode on Instagram or TikTok. But how many actually use these features? Those should be accompanied by efforts to raise user awareness about the subject so that everyone can make informed decisions.

Moreover, we would like to use the study as an opportunity to highlight the gray area and lack of transparency on key emission factors such as the average amount of data transferred per minute and the level of content compression. An accurate measurement cannot be made without these, same for optimizations. In the attempt of building standards and common reference frameworks to reduce the impact of digital on the environment, collaboration of all stakeholders is necessary.

CONCLUSION

From a user standpoint: sharing best practices for a more sustainable use of digital

The figures and comparisons made earlier in the report could give the impression to a regular user that it is better to prioritize one platform over another, here TikTok versus Youtube. However, to date, no reliable publication allows for such conclusions to be drawn. We will simply add the following nuance:

If we consider the perspective of the person publishing content, then there is a strong chance that the platform on which one posts long content (here, we recall that the average time of a video is 17 minutes on Youtube compared to 21 seconds on TikTok) is the one that generates the most emissions - if the performance (number of views) is more or less similar.

However, if we consider the perspective of the user, the trend is completely different. According to a study by Hootsuite and We are Social in 2021, the average monthly time spent by an individual is approximately 12 hours on Youtube and 21 hours on TikTok. If additional parameters such as total video length or completion rate prevent simple multiplication (1 minute on TikTok vs 1 minute on Youtube), it can be estimated without much risk that the amount of data transferred will be on average higher on the Chinese platform.

What can users do about it?

Fortunately, there are easy-to-adopt best practices for a less-energy intensive use of social networks Here are 3 examples:

1

Prioritizing the use of WiFi, which is on average 5 times less energy-consuming than the cellular network

2

On Youtube, adjusting the resolution to the device used (480p on a phone is a sufficient resolution)

3

Prioritizing "Low data" modes, available in the settings of the applications

FINAL WORDS

The latest study in our "Digital Pollution" series, published last October, revealed that the annual carbon footprint of the websites of the top 100 advertisers in the US was similar to that of the housing electricity consumption of the city of Los Angeles. The paradox between the drastic environmental impact and the general level of awareness was already alarming.

Here again, the scenario repeats itself, stronger. If no sufficiently consistent and reliable database allows us to extrapolate the balance of our hypothetical influencer on a global (or even national) scale, we can easily imagine a heavy balance. We also note that the study does not take into account the creative production which, given the resources sometimes put behind, would definitively add up to the equation.

However, and this is good news, all stakeholders have the means to act, from influencers to brands, users, agencies and platforms. From improved brand perception to higher engagement, lower energy consumption... the shift towards digital sustainability is full of opportunities for all those willing to embark on the journey.

3 key takeaways
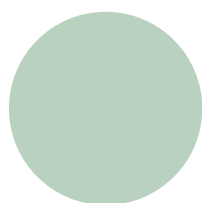
No. 01 — The (very) tangible impact of influence

1,072 tons of carbon can be generated per year by a French influencer with about 3 million subscribers and active on Youtube, TikTok, and Facebook. That's more than 481 round trips from Paris to New York.
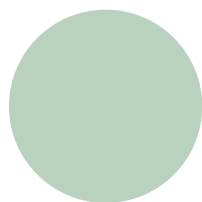
### No. 02 — A need for collective responsibility

The reduction of emissions generated by the publication and viewing of content on social networks can only be done with the collaboration of all stakeholders, including influencers but also brands, users, agency and platforms.
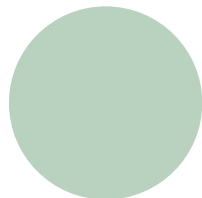
No. 03 — Countless opportunities to seize

If external factors such as legal restrictions may give the impression of a constraint, the benefits of adopting sustainability best practices are numerous, from lowering energy consumption bills to improving brand image or increasing post engagement.

METHODOLOGY
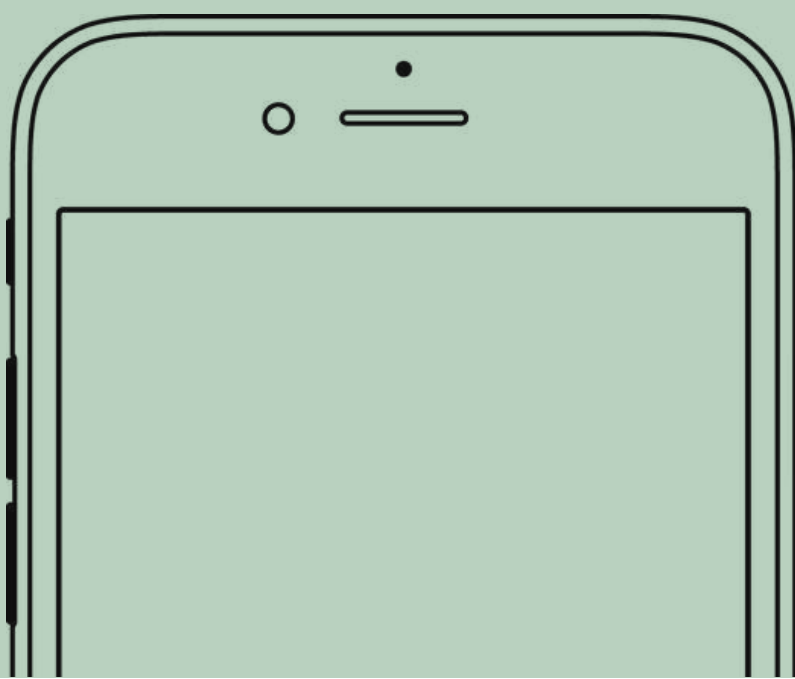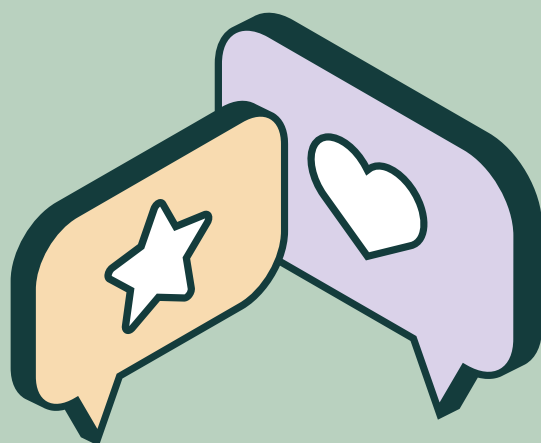
METHODOLOGY

## 1. Methodology and measurement process

Building the digital ecosystem of the future requires to join forces within and across sectors. That is why our media and tech experts have built their methodology based on the latest industry research.

Our methodology is SRI (Référentiel de calcul de l'empreinte carbone de la diffusion des campagnes digitales) and ADEME compliant and continuously consolidated by our seasoned environmental and tech experts.

2. How are calculated emission? A publication impression journey

The impact of a post is directly related to the amount of data it contains, which determines the energy needed to store (1), transfer (2) and display it (3). Total energy needs, combined with the proportion of fossil fuels versus renewables consumed for the energy source at each stage, will define its climate impact.

To calculate the impact of the servers, networks and end devices, we account for their entire life cycle which include not only their use but also the manufacturing and end of life process.
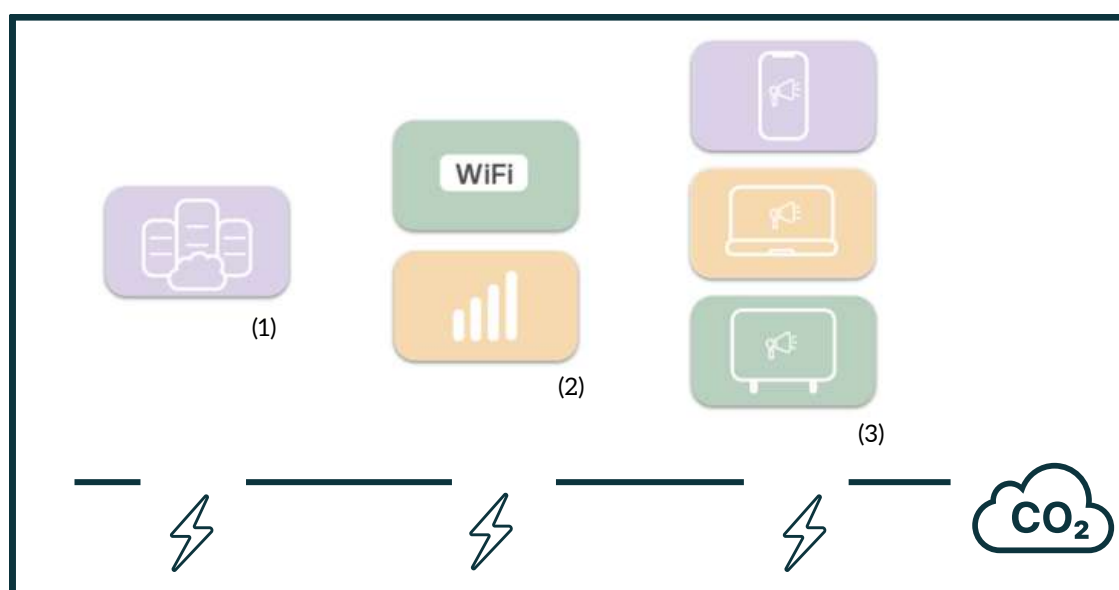
METHODOLOGY

3. Emission factors

Many factors will then contribute to either increase or mitigate the carbon impact of a post's impressions.

Video length
Longer videos require more data transfer and device usage, increasing energy consumption and emissions across the process.

View rate
Emissions will also change depending on total view rate, videos watched partially will have lower impact than full views.

Connection type
Networks also have significantly different impacts. For example, the same video sent with mobile data will consume more energy than the same video sent via WiFi.

Compression rate
Asset compression also has a significant impact on the amount of data transferred, also impacting energy consumption and emissions.

Device
Each end device has a different impact depending on their energy consumption, both in their LCA and usage.

Electricity grid carbon intensity
Each grid has different carbon intensity depending on how much green energy contributes to total electricity generation.

METHODOLOGY

4. Calculation methodology

Formula

$$Ad_{ci} = Ad_w \times DT_{ei} \times [(E_s \times GI_s) \times (1-GH) + (E_t \times GI_t) + (E_d \times GI_d)]$$

$$Ad_{ci} = Ad_w \times 0.38 \times [(13\% \times GI_s) \times (1-GH) + (24\% \times GI_t) + (63\% \times GI_d)]$$

Details

Total emission of a post's impressions
Ad_{ci} = Total carbon intensity
(grCO₂e per impression)

Impression energy consumption
Ad_w = File weight (KB)
DT_{ei} = Data Transfer and storage energy intensity (kWh/KB)

Transmission network impact:
E_t = % of energy dedicated to transmission network
GI_t = grid intensity in transmission networks (gr CO₂ / kWh)

Server impact
E_t = % of Energy dedicated to server
GI_t = Grid Intensity where the server is hosted (grCO₂ / kWh)
GH = % of additional server green energy proven by green hosting

End device impact
E_d = % of energy dedicated to end user devices
GI_d = Grid intensity in end device location (gr CO₂ / kWh)

METHODOLOGY

5. Limits of the study

Data collection

- **Geographical location of audiences.**

The geographical location of audiences (which in the calculation methodology correspond to "end users") have been estimated using an influencer marketing platform. The breakdown is the following:

- Youtube: France (69%), Belgium (8%), USA (7%), Canada (2.7%), Brazil (1.7%)
- Instagram: France (98%), USA (0.40%), Canada (0.10%), Belgium (0.10%), Brazil (0.10%)
- TikTok: France (81%), Belgium (7%), Switzerland (2%), Morocco (1.5%), Canada (1.2%)

Because of the different electricity grids, a small part of the audience in a country where the energy mostly comes from fossil fuels can have a significant impact on total emissions. For example, the same post impression in the USA will generate 5 times for emissions than in France.

- **View-through rate**

The average completion rate by platform is based on industry benchmarks (1000heads data). The different view through rates were then estimated following a linear approach.

- **Estimated impressions for non-video formats.**

For non-video formats (image, carousel), the total number of impressions was estimated at 26% of the total follower base at that time following industry benchmarks (1000heads data).

- **Not accounting for Instagram stories**

On Instagram, ephemeral publications (stories) were not taken into account due to a lack of history. Since these are only available for 24 hours, it is currently impossible to estimate the total number of publications in a year, especially since it can vary greatly from one profile to another, not to mention the alternation between static and video content.
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METHODOLOGY

Emission calculation

Uncertainty about the impact of video compression on social media platforms:
The difference in data consumption used to estimate potential emissions reductions from file compression is obtained from reliable sources, but it is unclear whether it would have the same impacts in each platform. Each platform has different systems for recompressing and adjusting image quality based on different parameters, which are not clear. While the total impact may vary, file compression can still be considered a good practice to mitigate impact. This report considers that data compression will reduce energy consumption in servers and transmission networks, but not on end devices. There are two reasons for that; first, the methodology applied to estimate end-device emissions is based on time of use, to better capture their full LCA impacts and; second, the impact of compression on end devices is less correlated with total energy consumption.

Digital energy consumption:
The uncertainty associated with some of the variables in our methodology is very high (we found values for the energy intensity factor of data transfer and storage that vary over several orders of magnitude). We will continue our research to refine and consolidate these values, which will have an impact on the final result. The value selected for this report interpolates several sources and is comparable with credible industry standards.

Electricity Emissions:
For simplicity and compatibility purposes, we use average electricity emission factors to estimate emissions from electricity use in this report. Marginal emissions factors, which better capture the impact of additional loads on the grid, are expected to increase total emissions. Estimating the full LCA impact of electricity generation will also give us a better picture of the true impact of consumption, which will further increase total emissions. Adopting those emissions factors would show that the structural emissions reductions as a consequence of good practices recommended in this report are several times higher.

Also, while some platforms and websites are using data centers that claim green energy use, it is unclear at the moment which ones are using real green energy and which ones have Power Purchase Agreements (PPAs), and which are simply buying Renewable Energy Certificates (RECs). Some even mention combinations of those mechanisms without detailing in which proportion each of them contributes to decarbonizing their activities. Given the existing uncertainty about the additionality of some of these credits and the lack of clear information about electricity decarbonization initiatives, those efforts are not considered in the current methodology. If applied, this variable would reduce total emissions and emissions reduction potential on the servers' side.

SOURCES

1	The State of Influencer Marketing 2022	Influencer Marketing Hub	Mars 2022
2	Attention Span Research	Microsoft Canada	2015
3	Mobile Video Viewers and Penetration Worldwide (2016 – 2021)	Emarketers	2018
4	Digital 2022 Global Overview Report	Hootsuite et We are Social	Janvier 2022
5	World Inequality Report	WID World	2022
6	Sorry Android fans, Apple is right: 1080p is all we need for smartphone screens	PC World	2021
7	Decoding 720p: The Best Streaming Resolution Settings for Live Quality Video	Dacast	2022
8	Rapport 2023 sur l'impact du marketing d'influence	Traackr	2023
9	State of Influence	Launch Metric	2020