V2022-1.0-EN

The Carbon Footprint
of media campaigns

Short version

STUDY | 55 the data company

Preface

Global warming caused by human activities is forcing economic players across the board to reduce their carbon footprint. In order to support marketing organisations in this challenge, fifty-five is releasing the ***first public study on the carbon footprint of major advertising channels***, with the associated methodology, starting with ***digital.***

This is the first of many pragmatic approaches designed to be improved upon as time goes on, with the strong conviction that data will be the key to success in ecological transformation, just as it already is to the success of digital transformation.

Our strong conviction is that in order to reduce our carbon footprint, we first have to measure it, highlighting the importance of evaluating the emissions caused by advertising campaigns.

We have chosen to be transparent and publish the methodology that we followed so that others may reuse, improve, and share it in their own way, thereby following an open-source philosophy. Consequently, if those involved somewhere along the marketing chain believe that some of our data-driven estimations are poorly evaluated, ***we would love to hear their feedback.*** We would be happy to take it on board in our model and publish their contribution.

It is difficult to ignore that, in the current climate of environmental sensitivity, some consider advertising to be intrinsically damaging, as it aims to create consumer desire, thereby needlessly increasing carbon emissions. However, the controversy around the very fundamentals of one industry or another is not the subject of our study. This study is devoted to evaluating the greenhouse gas (GHG) emissions of advertising campaigns and ways in which we can reduce them. Our reasoning is that, ***whatever the area of activity, reducing emissions is a top priority.***

About fifty-five

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We help brands leverage data and technology to craft superior brand experiences

fifty-five helps brands optimally exploit data and technology to improve marketing, advertising, and customer experience, and also works on **guiding its clients towards reducing their greenhouse gas emissions.** The diversity of profiles and skills that our company brings together allows us to accompany marketing teams from major brands in a wide range of industries. Founded in Paris in 2010 by former directors of Google Europe, fifty-five quickly experienced strong growth: it proudly joined MarTech giant The Brandtech Group (previously known as You & Mr Jones) in 2016, and now has over 300 employees in Paris, London, Shanghai, New York, Hong Kong, Geneva, Shenzhen, Taipei, and Singapore.

Find out more at **fifty-five.com**
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Estimating Greenhouse Gas (GHG) Emissions

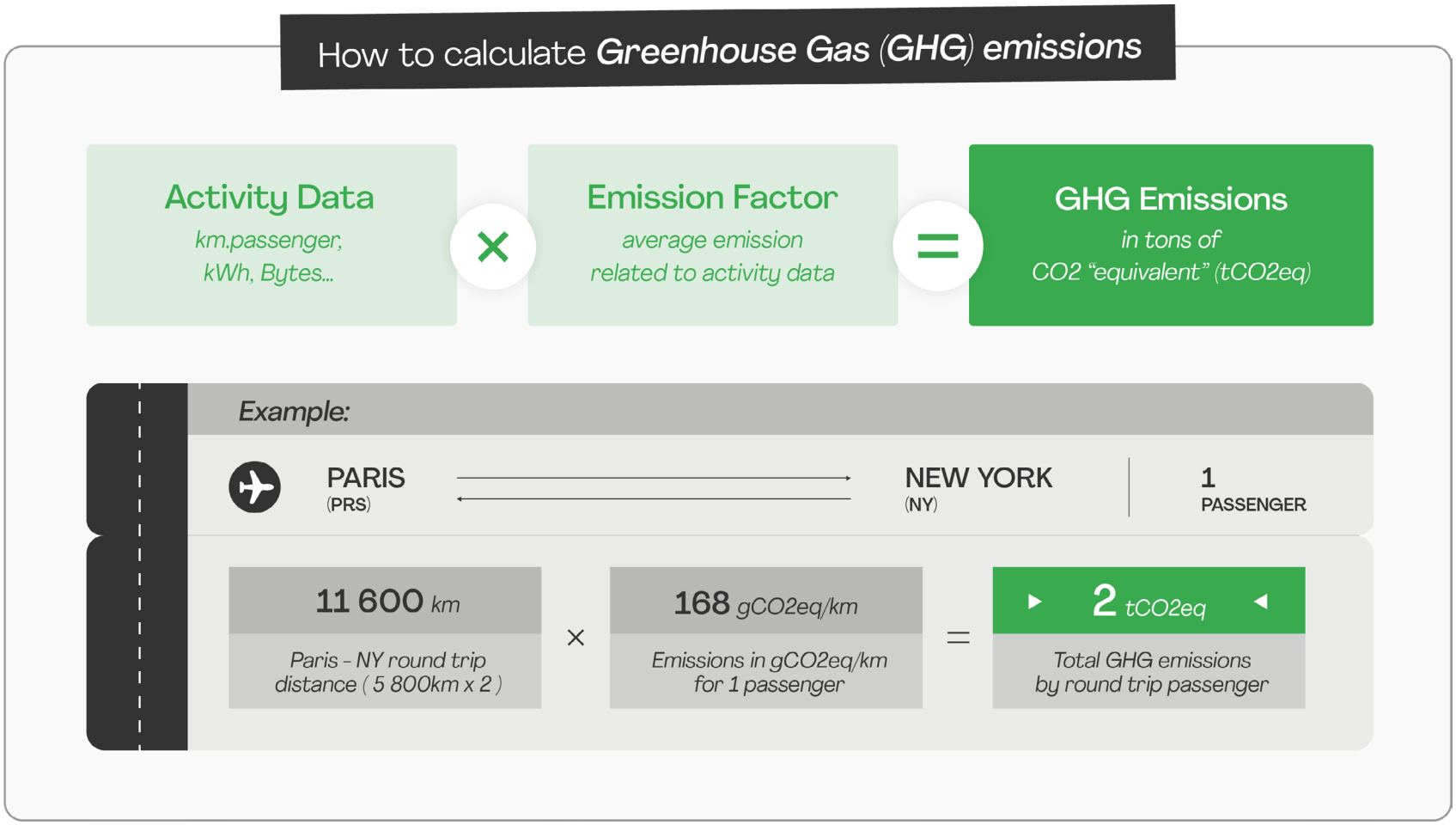
Measuring *CO2 "equivalent"* from *activity data*

In order to identify the best ways of reducing emissions, one must first estimate the extent to which each source of the GHG emissions contributes to the overall emissions of a campaign.

To do this, using a state-of-the-art method for measuring carbon footprints (the ***BilanCarbone®" method***), we use a common indicator to all sources: the mass of CO2 equivalent (CO2eq), which corresponds to the total mass of all the different GHGs emitted. By converting the mass of each gas depending on its global warming potential (GWP) compared to that of CO2, we get the term CO2 "equivalent".

To identify this indicator from more easily accessible data, we use ***emission factors*** – a pre-established relationship between some activity data (like a number of kWh, km x passenger, a quantity of matter, a volume of data consumed, or even man-days in the context of providing services…) and a ***CO2eq mass*** (see the detailed calculation on the next page).

In order to simplify this task, the French service ***ADEME*** has made available on its website ***bilans-ges.ademe.fr*** a database of emission factors, assessed by third parties in comprehensive studies. We have based the majority of our study on this data.


How to calculate Greenhouse Gas (GHG) emissions
Activity Data
km.passenger,
kWh, Bytes...
×
Emission Factor
average emission
related to activity data
=
GHG Emissions
in tons of
CO2 "equivalent" (tCO2eq)
Example:
PARIS
(PRS)
NEW YORK
(NY)
1
PASSENGER
11 600 km
Paris - NY round trip
distance (5 800km x 2)
×
168 gCO2eq/km
Emissions in gCO2eq/km
for 1 passenger
=
2 tCO2eq
Total GHG emissions
by round trip passenger

Data-driven estimates and *uneven playing fields*

It is impossible to break down every component of a particular source of emission's carbon footprint due to a lack of data, information, or available documentation.

As you may have gathered from the description of our method, we did not seek out exact figures to the nearest gram or even kilogram of CO2eq. It is nevertheless important for us to be able to reliably estimate these volumes. Consequently, we use exact values for the emission factors, but the results are expressed in data-driven estimates in tons of CO2eq, in graph form.

Similarly, as you will see in this study, it is impossible to break down every component of a particular source of emission's carbon footprint due to a lack of data, information, or available documentation. The scope that we use may, therefore, differ from one souce to another, thus making comparisons possible only if based on these data-driven estimates.

We will ***make use of these data-driven estimates*** to deduce potential ways in which emissions can be reduced, based on the campaign example established in the study. Advertisers should interpret these recommendations based on their individual circumstances.

The *Study*

The campaign studied

In order to allow advertisers and agencies to draw parallels between their own campaigns and the subject of our study, we have developed the example of a ***fictional advertising campaign***, although its media plan and data-driven estimates are taken from our own real-world experiences. For this first study, we have chosen to limit the evaluation to ***the carbon footprint of digital broadcasting***, thereby leaving offline channels (TV, radio, out of home…) unaccounted for.

This dimension will be the subject of a repeat of this study. Likewise, we have not analyzed the impact of measuring tools used by players in the market, which could be the subject of a future study. Finally, we have focussed on paid acquisition channels, not on organic channels or CRM.

A high-end perfume brand is looking to support its launch and promote its new perfume to its audience.

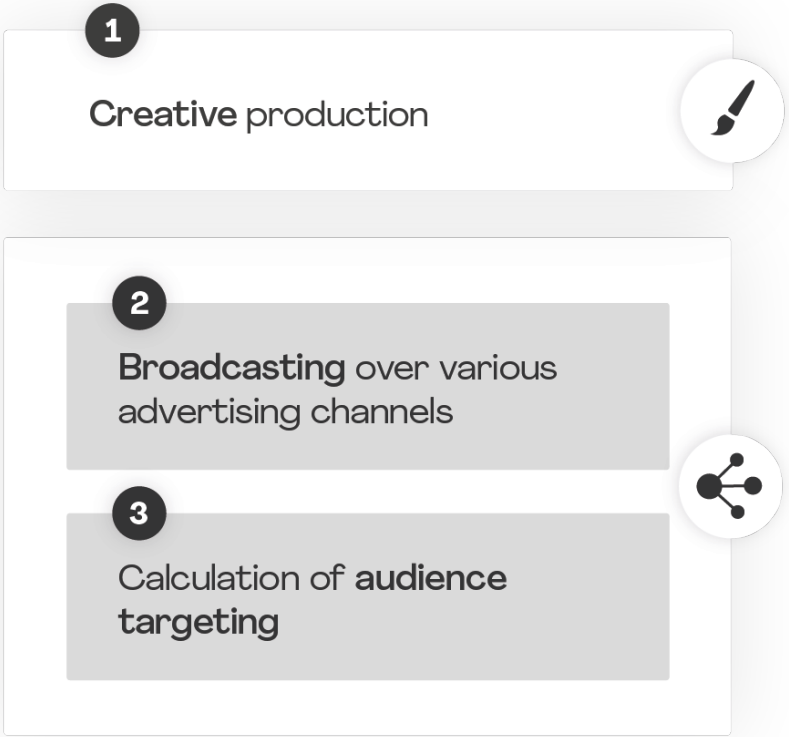
ADVERTISING CHANNELS		FORMATS
Paid Video	*Youtube*	*TrueView Pre-roll skippable 15s / Bumper Pre-roll unskippable 6s*
Paid Social	*Facebook* *Instagram*	*Video Feed, Static Feed, Carousel Feed, Collection Ad* *Carousel Instagram Story, Video Instagram Story*
Display	*Mutual* *Programmatic*	*Banners, Pre-roll (exclude YouTube), Half page, In-feed*
Sponsored Links (Paid Search)	*Google Ads*	*Text Ads, Shopping ads*
Offline: TV, Radio, OOH...		*To be reviewed in a future version*

> Contents

Its omnichannel communication strategy, which could be deployed either in North America, in Europe or in South-East Asia, makes use of several advertising channels and formats, listed below. This marketing campaign – called ***Perfume 2022*** – will last one month.

To estimate this initiative's overall impact, we must take into account, on the one hand, emissions linked to ***creative production*** 1, and, on the other, emissions linked to the plan in and of itself- or, in other words, ***the broadcasting and viewing of the content over various advertising channels*** 2. To go even further, we could also take into consideration the impact of ***targeting audiences*** 3.

A digital campaign's sources of emissions:



1 Emissions linked to *creative production*

Let us hypothesize that the creative process around the ***Perfume 2022 campaign*** involved making a three-minute advertisement. The film was then broken down in post-production into different formats (video, carousel, banners, etc.) adapted to each channel. In this part, we will, therefore, detail the emissions associated with the film's production, while choosing several scenarios (simulations) in order to take into account the main impacts of the creative decisions made while producing the film.

In order to use the most relevant criteria and emission factors possible, we have relied upon the work of players in the European production industry, who partner together under the name ***Ecoprod*** and who created the ***Carbon'Clap®*** tool.

Five main sources of emissions were revealed: ***technical teams and transport; the shooting process*** (sets, energy costs); ***technical production resources; graphic creation, editing, and post-production;*** and ***admin.***

Carbon'Clap®

An online calculator freely accessible at ecoprod.com that allows you to quickly assess the GHG impact of cinematographic and audiovisual production activities, by integrating an industry-focussed approach and terminology.

In the context of our campaign, let us consider the following scenario:

Scenario 0 (characteristics)

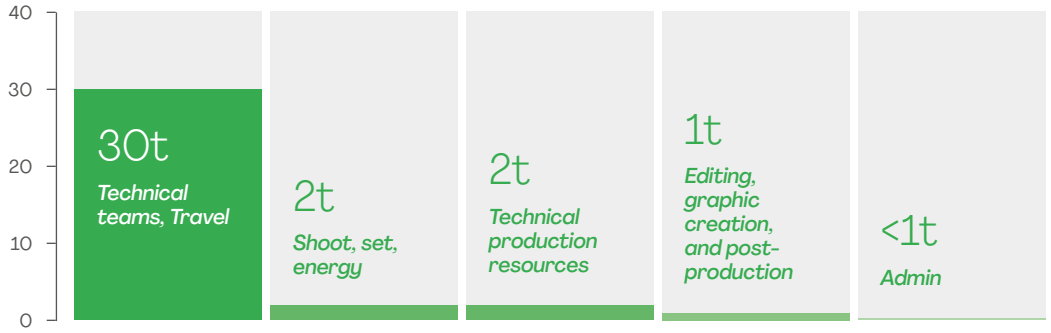
Shoot location	*South Africa (>1000km away from the brand HQ)*
Distance from airport to studio	*Less than 100 km*
Number of people traveling	*20*
Mode of transport	*Plane, economy class*
Film equipment	*Rental at destination*
Post-production work (man-days)	*20 (light post-production work)*

Here, we achieve an emission volume of ***35 tCO2eq***, broken down in the following ***graph*** 1.

Technical teams and traveling clearly represent the main source of emissions in this scenario.

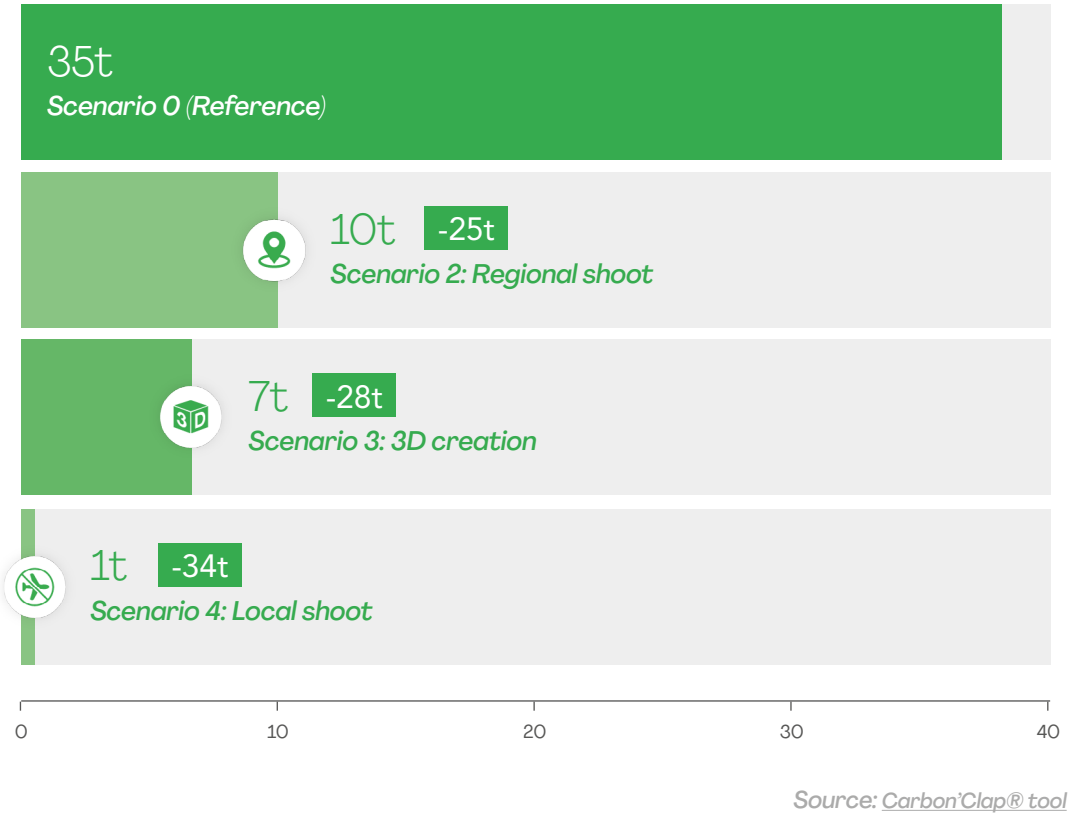
If we take a closer look at this category, we can see that traveling by plane counts for ***more than 80% of total emissions.***

1 *Emissions linked to the creation of the Perfume 2022 campaign by source in tCO2eq*



Source: Carbon'Clap® tool

2 *Emissions linked to creative production by scenario in tCO2eq*



Source: Carbon'Clap® tool

In addition to reference ***scenario 0***, we also studied several other scenarios (see *graph* 2) and varied the hypothesis associated with these sources of emissions, in order to draw conclusions about ways to reduce emissions linked to creative production in advertising:

- ***Scenario 1:*** Large budget, multiple shoots in the USA;
- ***Scenario 2:*** Regional shoot (less than 1000 km from HQ);
- ***Scenario 3:*** 3D creation, no physical shoot;
- ***Scenario 4:*** Minimalist local shoot.

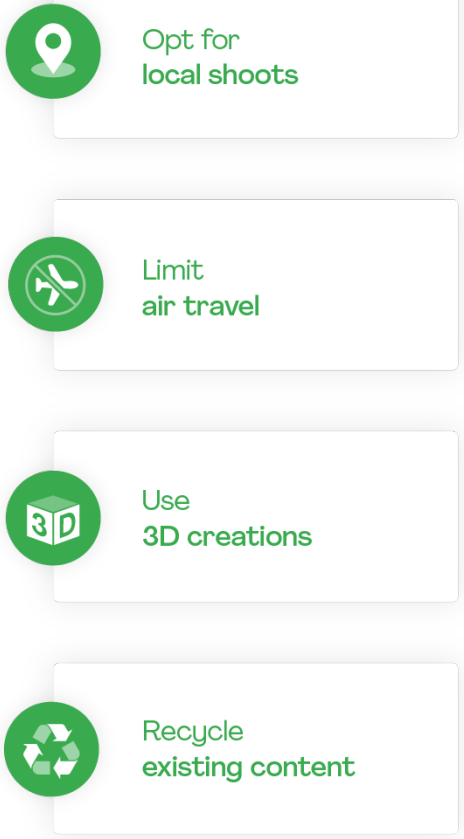
These scenarios are available in more detail in ***our full study (in French).***

To summarize, *graph* 2 ***shows us data-driven estimates for scenarios 0, 2, 3, and 4.***

Scenario 1, a large budget US shoot, is a rather extreme scenario that gives emissions of over ***200 tCO2eq.*** It helps us realize the risk associated with creative production in advertising: it is, after all, a source of emission that can rapidly grow to a high volume.

How can this be reduced?

- By avoiding ***far-flung shoots*** and limiting ***air travel***;
- By avoiding ***transporting film equipment by plane*** and considering ***renting it at destination***;
- By opting for ***3D creations rather than physical shoots***, while being careful not to end up doing both;
- By ***reusing or recycling films and/or existing shots*** in order to avoid setting up a shoot.



2 Emissions linked to *broadcasting* over *different advertising channels*

Method per channel

Video, Paid Social, and Display channels

For Video, Paid Social, and Display channels, we can always identify the same four sources of emission:

- ***The work carried out by the agency:*** emissions depend on the total number of days worked to devise the campaign's media strategy, set it up, monitor it, and produce its final performance reports. We consider that one FTE day worked equals 21 kgCO2eq of emissions*;
- ***The network used for broadcasting:*** emissions depend on the network used by the user (WiFi or cellular) and the size of the marketing material;
- ***Broadcasting advertisements via datacenter:*** emissions depend on the size of the marketing material;
- ***The advertisement's views:*** emissions depends on view time and on the devices used.

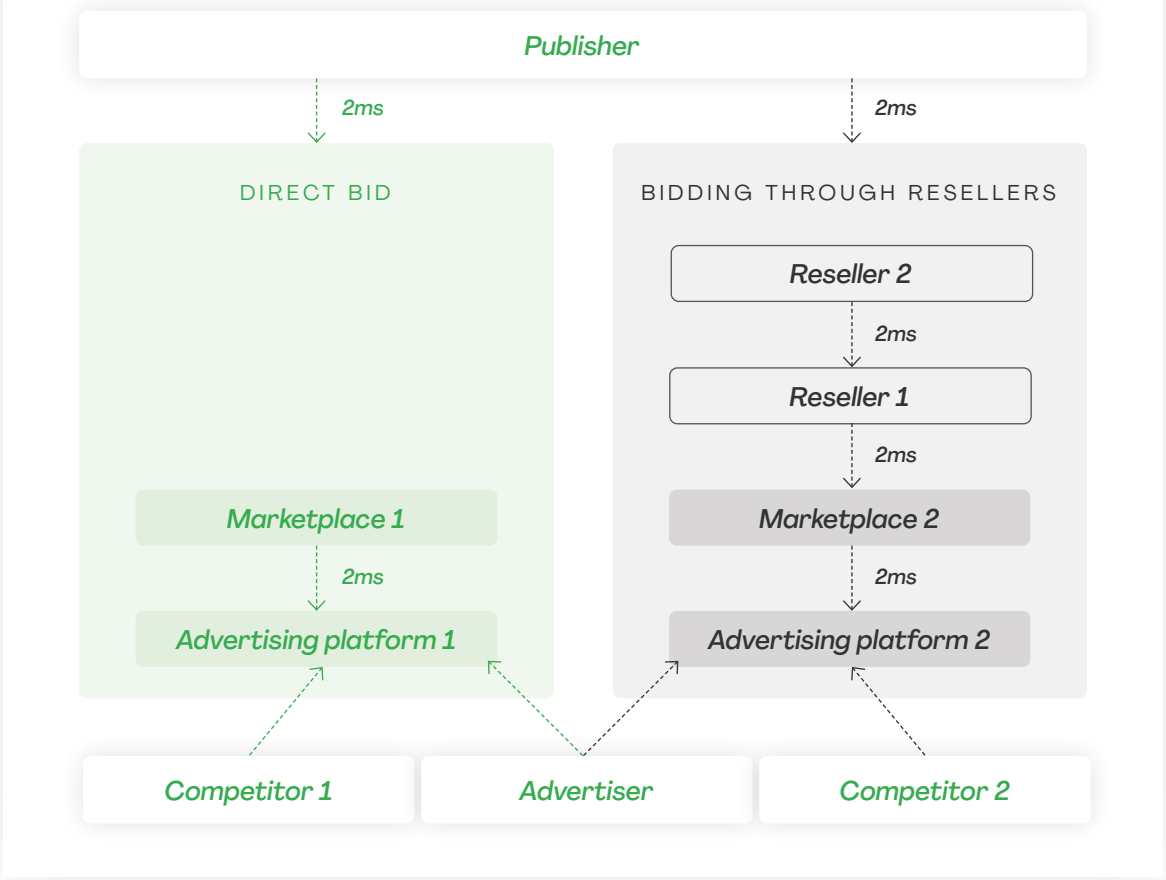
Auction calculations (programmatic display only)

It is not only ***programmatic display*** that constitutes a source of emissions, but also ***auction calculation.*** Indeed, when a publisher implements an impression on several marketplaces simultaneously, these marketplaces also use resellers, who can also use other resellers, and so on, generating extra GHG emissions (see *diagram* 3 on the next page).

As far as our Display campaign is concerned, the emissions linked to auction calculation are around 50

* Source: Average emissions per employee released by Havas and Publicis in their 2019 CSR reports.

3 *Programmatic display: stakeholders involved depending on purchasing method*



kgCO2eq, making up ***3% of this channel's total emissions.*** We are voluntarily not applying this source of emissions to Video and Social channels because, for these channels, advertisers have no control over the auction system.

Sponsored Links Channel

For the Sponsored Links channel, we take into account both the emissions linked to the media agency's work and the emissions linked to the work of the search engine's algorithm for showing search results.

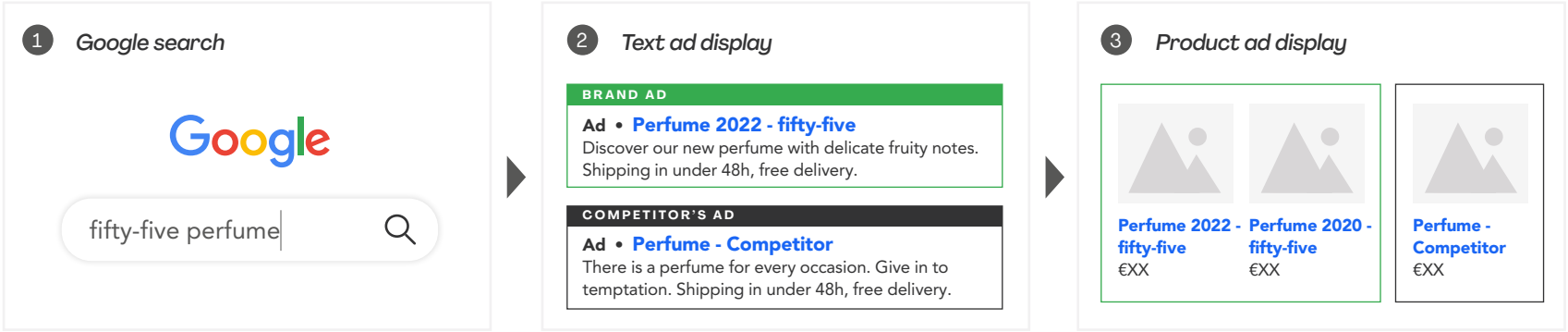
- ***Emissions linked to an agency's work*** depend on the total num-

ber of days worked to bring the campaign to fruition;

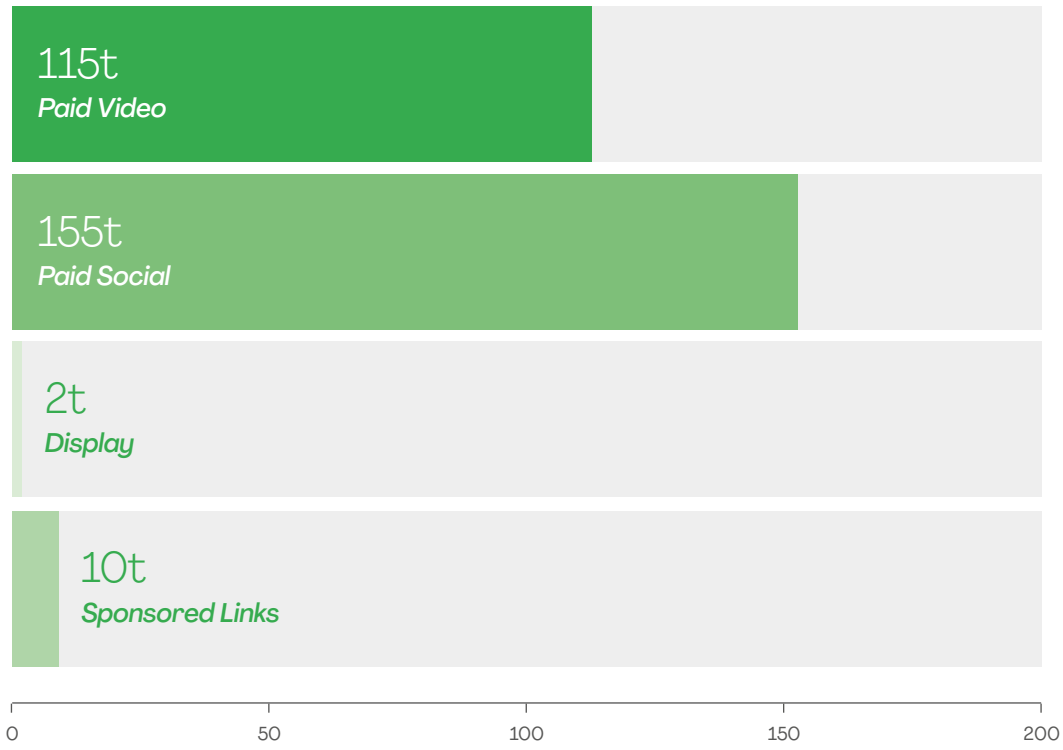
- ***Emissions linked to the algorithm's work*** depend on the volume of requests carried out by users. This is estimated from the advertiser's volume of impressions for exact requests for their brand as well as on requests for the brand with the word "perfume", during our Perfume 2022 campaign. Indeed, we can assume that these measures, via broadcast over other channels, can have a positive impact on the brand's reputation and its perfume offering.

The reasoning behind this is demonstrated in *diagram* 4.

4 *Illustration of the calculation of the number of search requests from the number of impressions*



5 *Emissions linked to broadcasting the Perfume 2022 campaign per channel in tCO2eq*



Source: fifty-five's analysis, based on emission factors from the ADEME's carbon base v20.2 and data provided by The Shift Project - /Lean/CT Materials/

Emissions per channel

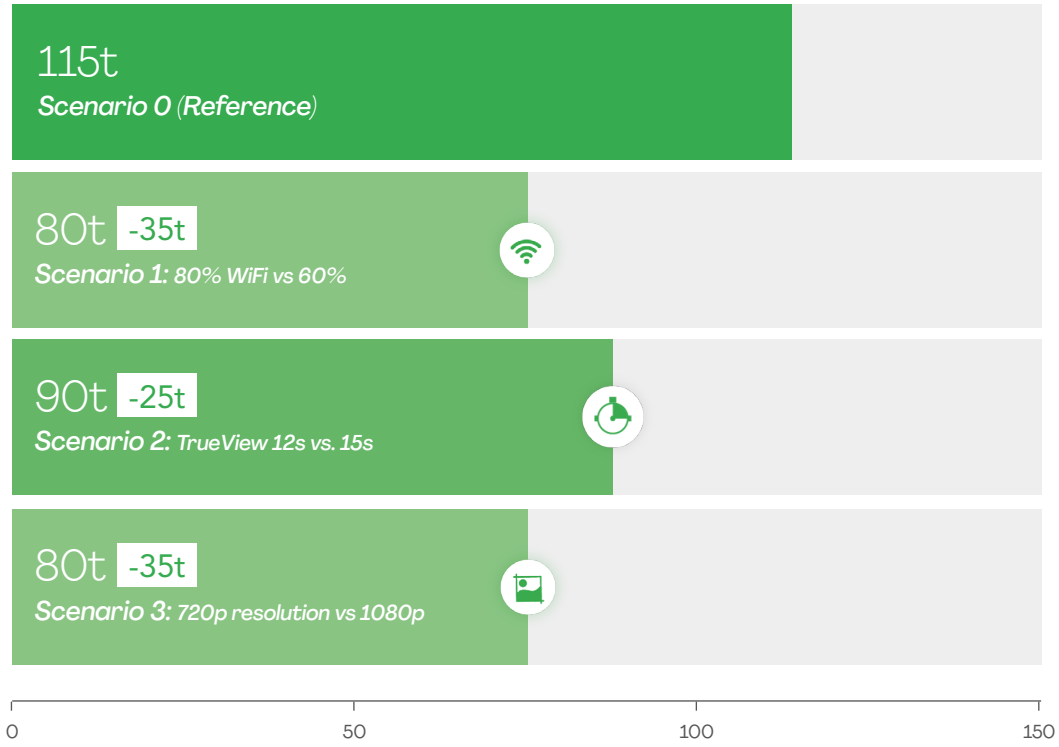
In the end, we obtain the emission details per channel in *graph* 5, based on the hypotheses of the ***Perfume 2022 campaign.***

Emissions per scenario

In the same way as with creative production, we have simulated several scenarios for each channel in order to identify the main ways in which emissions can be reduced.

For example, for the Video channel, we tested three alternative scenarios, and the results are laid out in *graph* 6 (see the next page).

6 *Comparison of video channel emissions per scenario en tCO2eq in tCO2eq*



Source: fifty-five's analysis, based on emission factors from the ADEME's carbon base v20.2 and data provided by The Shift Project - /Lean/CT Materials/

- ***Scenario 0:*** Perfume 2022 campaign hypothesis;
- ***Scenario 1:*** Broadcasting 80% via WiFi (compared with 60% in scenario 0);
- ***Scenario 2:*** 12s of TrueView (compared with 15s in scenario 0);
- ***Scenario 3:*** 720p resolution (compared with 1080p in scenario 0).

These scenarios allowed us to highlight the importance of ***optimizing the size of the video advertisement***, as well as choosing to ***use WiFi*** as much as possible to broadcast rather than mobile networks.

Emissions per impression

We introduced the idea of CO2e-qPM (CO2eq per 1000 impressions) as a nod to the CPM (cost per 1000 impression), which is frequently used to measure the performance of a campaign.

Our intention is not to pit advertising channels against one another, as we are fully aware that they respond to very different marketing goals and creative demands. This KPI serves simply to demonstrate the differences that exist between channels with an equal volume of impressions, allowing us to make the right decisions to reduce emissions.

For example, based on the hypothesis of our Perfume 2022 campaign, the Video channel returns the highest CO2eqPM (see *graph* 7). Nevertheless, it remains a powerful tool for increasing brand awareness.

Ultimately, the idea behind measuring the carbon footprint of different channels is not to determine which ones to use in a media plan, but rather to identify ways to optimize each channel.

7 *Emissions for 1000 impressions of the Perfume 2022 campaign in gCO2eqPM*

Source: fifty-five's analysis, based on emission factors from the ADEME's carbon base v20.2 and data provided by The Shift Project - /Lean/CT Materials/

3 Emissions linked to *audience targeting*

For each advertising channel, we try to directly reach the right audience by refining ***targeting*** (based on the platform's available databases, lookalike, or retargeting, among others).

The direct effect of targeting is the reduction in impression volume and video views, leading naturally to a reduction in emissions. However, we use extra tools in order to achieve this, and these processes have their own carbon footprint.

In regard to targeting, a commonly used method consists of scoring a user based on first- or third-party data.

Sources of emissions due to ***user scoring*** can be broken down into several categories:

- The storage of the data necessary to calculate a score;
- Audience targeting calculation (by model or by rules).

Several parameters can then be applied to further adjust each of these emission factors:

- The quantity of data to stock per day;
- The number of campaigns using the same data at the same time (thereby mutualizing data storage costs);
- The length of the campaign.

By formulating three hypotheses (low, average, and high) based on our experiences from different accounts, we can therefore deduce the results in *table* 8, which you will find on the next page.

As far as our Perfume 2022 campaign is concerned, emissions linked to targeting calculation are only a few kilo-

grams and make up less than ***1% of total cross-platform emissions*** (excluding creative production).

8 *Estimated emissions linked to audience targeting calculations by source in kgCO2eq*

	in kgCO2eq	Low	Medium	High
Based on proprietary data	*1. a) Emissions from data storage*	*0.07*	*0.83*	*60.55*
	2. a) Emissions from audience targeting	*0.58*	*1.04*	*1.73*
	TOTAL	*0.65*	*1.88*	*62.29*
Based on third-party data	*1. b) Emissions from data storage*	*0.67*	*1.88*	*2.55*
	2. b) Emissions from audience targeting	*1.76E-05*	*7.03E-05*	*1.58E-04*
	TOTAL	*0.67*	*1.61*	*2.55*

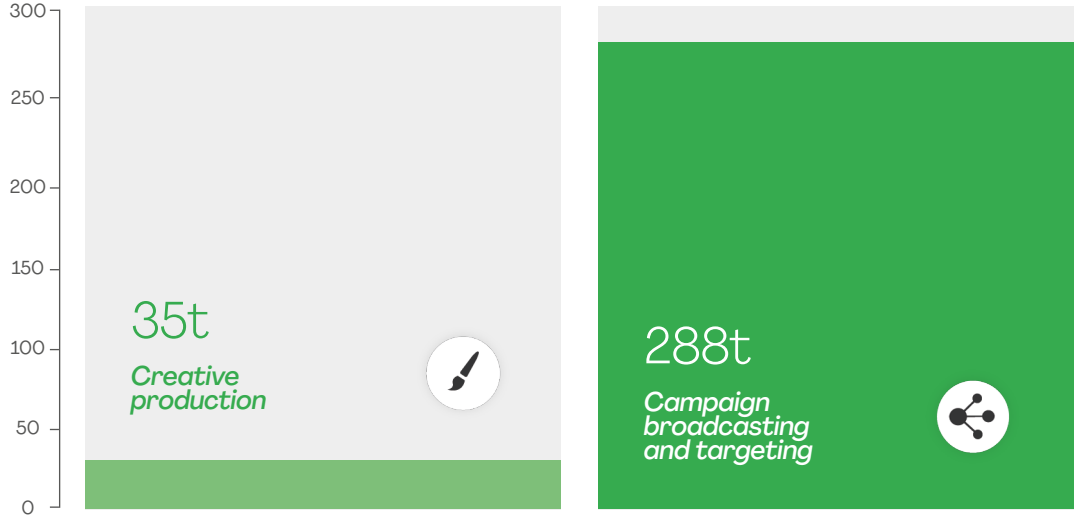
Source: fifty-five study based on different data sources (see the full study in French).

The carbon ***balance sheet*** of an ***ad campaign***

Based on the example of the Perfume 2022 campaign, we can conclude that the data-driven estimate of total emissions for a digital advertising campaign is 323 tons of CO2eq (in other words, roughly the annual carbon footprint of 16 American citizens).

Creative production and broadcasting represent roughly the same volume of emissions (see ***graph*** 9 *).*

9 ***Comparison of emissions caused by creative production and those linked to the deployment of the campaign across all channels*** *in tCO2eq*



Source: fifty-five's analysis, based on emission factors from the ADEME's carbon base v20.2 and data provided by The Shift Project - /Lean/CT Materials/

Starting to *reduce emissions*

Our recommendations for starting to *reduce emissions*

Opt for sustainable shoots

Opt for local shoots or recycle existing content:

*- Creation is the source of emissions with **the highest risk;***

***- Reusing content** remains the best way to limit emissions.*

A video shoot can easily emit >200t of CO2eq

Transport makes up >80% of emissions

Output lighter video content

Strive to make shorter, lower-resolution videos:

*- Video is the **heaviest of advertising formats;***

*- Reducing the size of a video involves **making it shorter** and/or using **a lower resolution.***

Shortening a video by 3s = -20% of CO2eq

Shooting in 720p instead of 1080p = -30% CO2eq

Use WiFi instead of mobile networks

*Limiting the use of mobile networks and instead sharing via **WiFi** can help significantly reduce a campaign's carbon footprint.*

Mobile networks emit around 6x more GHG than WiFi

Maximize ad targeting

Prioritize targeting the most qualified audiences:

- Processes for targeting audiences have ***a low carbon footprint;***

- Targeting is ***a better use of marketing budgets*** *and* ***drastically reduces*** *pointless impressions that needlessly generate carbon emissions;*

*- To calculate the impact of targeting, one could make use of the "gCO2PM", or carbon cost (****gCO2eq****)* ***per 1000 impressions.***

The carbon footprint for target calculation is <100 kg of CO2eq

Reduce the number of bidding parties at auctions

Reduce the number of stakeholders involved in the auction process:

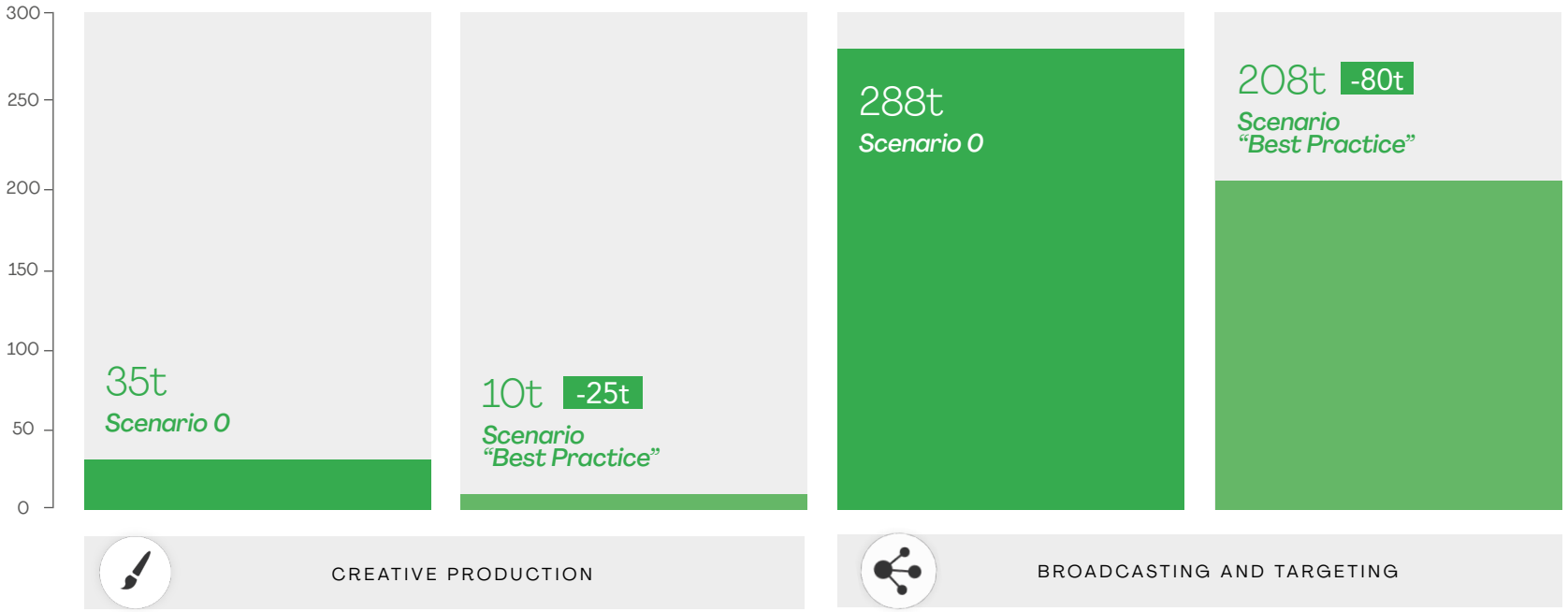
- The more competition and middlemen there are, the more calculations become necessary, leading to higher carbon emissions.

The same advertising space can be bought through >30 players

By applying some of these good practices in an alternative scenario, we could succeed in reducing a campaign's emissions by around half (see the "Good Practice" scenario in *graph* 10 on the next page).

That is the equivalent of the emissions generated when buying the IT park of a medium-sized business (~250 employees).

10 **Comparison of emissions between the Perfume 2022 campaign** *(scenario 0)* **and a campaign that applies all good practices** *("Best Practice" scenario) in tC02eq*



Source: fifty-five's analysis, based on emission factors from the ADEME's carbon base v20.2 and data provided by The Shift Project - /Lean/CT Materials/

Conclusion

For this first study, analysis of GHG emissions was restricted to digital advertising channels, and a lack of reliable data limits how precise these evaluations can be.

However, the process allowed us to establish data-driven estimates, hierarchies, and emission factors that can lead to a significant improvement in GHG emissions, without compromising on a campaign's efficacy.

Since an evaluation of these emissions had never previously been published, and the marketers in our example did not try to find ways to reduce emissions, it is logical that we are able to identify areas for immediate and substantial gains. Considerable gains can be made very quickly, with no true compromise on quality or productivity. Let us hope that brands quickly adopt these first simple and effective emission-reducing measures.

In line with the principles of diminishing returns, savings further down the line may be more difficult to achieve in the first place and smaller. It is therefore important to implement systems that monitor the energetic performance of these campaigns, similar to what is currently used to monitor economic performance. It could be particularly useful to evaluate an acquisition carbon cost CO2eqAC (equivalent CO2 Acquisition Cost)- or, in other words, the equivalent of CO2 emissions created for the acquisition of a new client.

Furthermore, it would also be useful for marketers to optimize the "Life Time equivalent CO2 Footprint", taking into account both the lifespan of acquired clients and the usage profile. This would allow for optimization of marketing campaigns with regard to the company's overall emissions.

Emissions linked to campaign performance measurement could be ano-

Conclusion

ther topic to explore, with tools such as Analytics, demand-side platforms (DSP), or certain ad servers.

These solutions require servers for collecting, computing, and rendering data, so their carbon footprint could be evaluated and major ways of reducing emissions found, especially in terms of deployment and configuration, among other areas.

To conclude, the case is very far from being closed, and there is still a lot of work to do before we completely realize the significance of what is at stake.

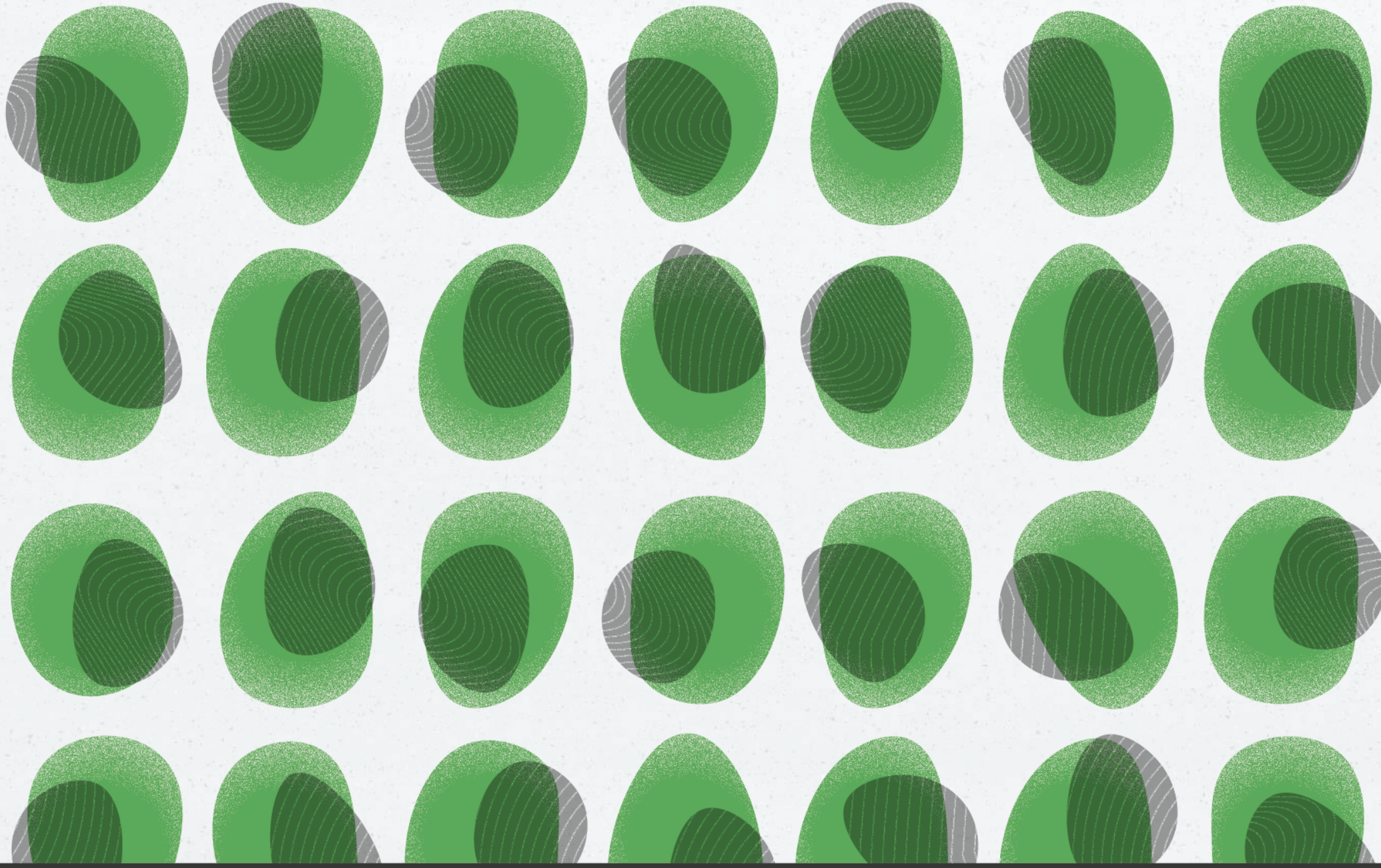
fifty-five hopes for and calls for the marketing industry to mobilize quickly and massively around the importance of reducing GHG emissions.

See the full study in French

> ftfv.co/carbon/study

Contribute to the study

> ftfv.co/carbon/contribute



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