AD NET ZERO
ALL FOR NONE

THE AD NET ZERO GLOBAL MEDIA SUSTAINABILITY FRAMEWORK

A playbook of voluntary industry standards that address media greenhouse gas emissions data and calculations.

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Contents

Executive Summary

Why is this framework needed for media sustainability

Ad Net Zero is a global, five-point climate action programme to help the advertising industry to decarbonize their ad operations and supporting every industry to accurately promote sustainable products, services, and behaviours.

Action 3 of Ad Net Zero's five-Point Action plan helps the industry to reduce emissions from media planning and buying.

This playbook focuses on media, and makes a series of recommendations to establish transparency, consistency, and accuracy so that the industry can consider how to voluntarily pursue reductions at an individual company level. It is important to note that addressing climate impact is just the first big step in our long and multi- faceted sustainability journey.

Academic estimates size the media industry (e.g. the placement of ads into ad breaks and positions) at 2-3% of total greenhouse gas emissions. For some advertisers, media represents as little as 5% of total organization emissions, however, it can be as much as 40% of total emissions based on data shared with Ad Net Zero. Looking at marketing agency holding companies, media emissions as proportion of total emissions can climb to up to 55%, based on data available. Therefore, media emissions do represent an important area of focus for measurement and for consideration in reductions.

What is this and who is it for?

The Global Media Sustainability Framework (GMSF) is a voluntary and holistic proposal of frameworks built on industry best practices to help advertisers, media agencies, media publishers, media intermediaries and media sustainability specialists with their individual approach to data, measurement and reporting challenges. The GMSF is aimed at providing media stakeholders with voluntary and pre-competitive tools to allow for the measurement of emissions more accurately across channels, geographies, and providers. It proposes tools for the media industry to better account for their scope 3 emissions, using media industry and climate-science based standards and best practices. It was created to support and facilitate the work of media directors at advertisers, media investment and sustainability leads at agencies, media sustainability specialists at media organizations and intermediaries, and sustainability experts at media solutions providers.

In summary, the voluntary GMSF has the objective of fostering **enhanced transparency, consistency and accuracy**, with the aim of creating pre-competitive conditions for further innovation. Leaders in the industry are encouraged to consider how this voluntary framework and agenda may be relevant to the individual needs and business objectives of your organization.

What are the challenges being addressed?

Background

Last year, Ad Net Zero (ANZ) published a guide that proposed ten steps that media stakeholders could voluntarily take to reduce greenhouse gas (GHG) emissions for several media tactics, ranging from digital to print to out-of-home to television. We are grateful for the voluntary sharing of case studies for consideration from organizations across the industry.

Even before we assembled the guide, Ad Net Zero's stakeholders expressed a need to develop a voluntary measurement framework based on industry-informed best practices. After our listening tour and research, we determined this work could help alleviate some challenges and offer efficiencies to embrace the opportunities identified in our research.

Common challenges identified from our research

Variability in emissions measurement creating confusion	We heard from advertisers and national associations who shared the results of their A/B testing, which compared emissions estimates from different providers. These results showed variability ranging from 6x to 20x difference in emissions estimates.
Fragmentation of data requests leading to inertia	We also heard that the marketplace was asking for different data in an inconsistent way, which buried media suppliers with multiple contradictory requests that were hard to prioritize.
Impending reporting requirements highlighting skills and capability gaps in media emissions quantification	We know that carbon accounting is trailing financial accounting and that large organizations will be required to start reporting on their emissions data as part of the EU's CSRD and the US SEC's climate disclosure rules. These new legal requirements are mobilizing media value chain participants into data collection and reporting that will benefit from guidelines consistent with other sectors.

Approach

From these three challenges, we determined that a voluntary industry framework was necessary to **enhance the transparency, consistency, and accuracy in the way marketing industry stakeholders calculate media GHG emissions in support of climate action**, and that the voluntary framework would need to span across three main areas:

Functions (how it will work alongside existing climate standards)	A voluntary industry framework for media should be consistent with the IPCC framework and the Greenhouse Gas Protocol (and related standards such as ISO 14064 and ISO 14067) and should propose industry-informed best practices to guide the development of work by and for the media industry, in order to better serve advertisers by aligning with how carbon accounting is conducted by other departments and sectors.
Channels (how it will fit across the entire media landscape)	A voluntary industry framework for media should be pre-competitive and work across all relevant media channels without bias or prejudice and work towards a fair and replicable framework to ensure that subsectors within media follow a consistent approach.
Geographies (how it will accommodate global strategies and communication)	A voluntary industry framework for media should ideally stretch to all geographies. The goal is to give as many stakeholders as much visibility as possible of the emissions from paid media campaigns globally.

Who was involved?

We embarked on a process to create the Ad Net Zero Global Media Sustainability Framework (GMSF), a process that brought together 53 marketers, 6 media agency holding companies, 31 media owners, 27 industry associations, and 23 media sustainability solutions providers in a pre-competitive space to voluntarily participate in research, a series of six working groups, and feedback on recommended approaches. These organizations represent views from 42 markets.

We're inspired by the generous efforts and contributions across all stakeholder groups to produce this first version of the voluntary GMSF and recognize that this is the start of an industry-wide journey for the ultimate benefit of the planet and society.

Oversight: How governance incorporates and leverages expertise

In order to validate the scientific integrity of the work and the relevance of the work to industry objectives we established two governing groups:

Steer Team	Responsible for ensuring that recommendations are relevant to media buyers and sellers and that approaches are developed without the influence of commercial interests and in a pre-competitive manner.
Climate Science Expert Group	Responsible for ensuring that recommendations are science-based and consistent with GHG accounting practices across other sectors and are developed with scientific grounding and oversight.

Key messages: What do senior leaders need to understand?

Managing vision and purpose in an industry-wide effort and transformation requires clarity, and there are three key messages to share:

This is a point on the journey, not a finish line	The GMSF framework is strictly voluntary and open to stakeholders in the media industry. It provides for tools to enhance accuracy and consistency in the emissions quantification of media campaigns. The core of this voluntary system – metrics and methodology - will evolve over time as audited, activity-based media product-level data become available and as the science evolves.
Same business outcomes, just more sustainably	The goal of this work is to develop voluntary industry frameworks that support efforts to more accurately quantify emissions from media campaigns and provide for a pre-competitive and sustainable media industry. The goal of media remains consumer reach in order to influence a purchase decision. The ANZ Global Media Sustainability Framework does not challenge the fundamentals of media planning and buying – only aims to help in the emissions measurement of it.
Made voluntarily using best practices, with the freedom in adoption	The voluntary GMSF is a pan-industry pre-competitive collaboration. It has been an amalgam of best practices voluntarily shared and workshopped to create a voluntary and pre-competitive, industry-informed standard. This guidance respects company freedom – stakeholders will have the liberty to endorse and adapt solutions relevant to their services.

What opportunities can the GMSF encourage?

There are a number of opportunities that could arise from adopting the GMSF

Getting the most accurate data possible, in line with best practices	The more granular the data, the lower the level of uncertainty in a company's measurement and reporting. The goal for data is to employ activity-based product level data that is reflective of the media inventory sold to advertisers, with supporting steps, based on actual energy consumption. This won't be delivered immediately by all entities, but we have defined different levels of data, consistent with the IPCC and the GHG Protocol approaches to other sectors, to invite the industry's leaders to start producing data that will eventually reach that level of granularity. Part of increasing accuracy will come from better bases for attribution of emissions, ranging from Level 1 Enterprise, Level 2 Market, Level 3 Business Unit, and all the way to Level 4 Media Product. In the absence of activity-based, product-level emissions data there will still be levels of approximations made. In future work, and in conversation with local cross-industry stakeholders, we will look to define a non-binding recommendation to produce more specific data over time.
A common, consistent framework to assess message delivery across channels	Adopting a framework to identify energy-consuming activities in a media strategy will facilitate rigorous communication across different stages of delivery. The Channel Emissions Frameworks (CEFs) in this document create a reference point and recommend what should be included for calculation and are a leaping off point for formula development and data collection. These Channel Emissions Frameworks (CEFs) are underpinned by the core phases that a created ad takes in media; Creation, Distribution, and Consumption. (It is important to note that this voluntary framework excludes emissions from the creative production of an ad, but starts once the execution is created.)
A pathway to audited data and integration	Given the importance of GHG reporting, we recognize that verification of data and formula application is a natural development. As such we've started to engage key auditing bodies on these voluntary frameworks as the potential leaping off point for audit on product-level data reporting, use within the media process, and for use in post-campaign reporting into larger sustainability reporting efforts.

What are some watch-outs to acknowledge?

The Transformation must be taken in stages

In the infographic below we outline broad buckets for transformation and the stage gates required to signal the transition from one phase to the next. The first and most important step, is Benchmarking + Understanding. Data is only gathered at this stage, and shouldn't be used for Reduction or Optimization, unless there are clear areas of waste that parties can identify, such as high-emitting behaviours in MFA media placements.

Flawed comparisons should be avoided

Media-related emissions data should be used to assess company specific progress over time. At this stage we should consider media emissions data to be channel and provider-specific. Stakeholders and partners should encourage continuous improvement and should only consider tactical steps as media emissions data become more consistent. Use of media emissions data alone to change a media strategy is not advisable, and advertisers should consider the data in combination with business and marketing effectiveness objectives.

Prioritize the elimination of waste

At times, emissions reduction of a channel will be dependent on the supporting structures around it i.e. the electricity grid a channel runs from. Media sustainability leaders may want to consider where and how they can pursue emissions reductions in their value chain – both upstream or downstream – to help reduce their impact. Additionally, there is mounting evidence for duplicative pathways in digital media that imply waste in the form of too many selling pathways. Media and sustainability leaders will need to reflect on their choice of, and influence on, these wider considerations.

What will success look like + how to manage transformation
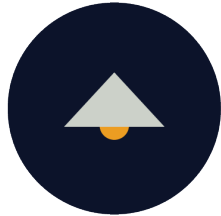
Understand + Benchmark

- Establish an understanding of media's impact
- Consider collecting emissions measurement from key markets, key channels, key partners
- Consider the development of future emissions monitoring plan

Reduce + Challenge

- Consider Ad Net Zero Action Guide Steps
- Review waste-eliminating steps (non-productive, low-cost media)
- Consider encouraging key partners to provide emissions data production and their own reductions

Specify + Optimize

- Consider the specificity of data available and the scale of it (market coverage, total media investment coverage)
- Consider ways to optimize within channels to advance emissions reductions based on individual organization goals and objectives

The next sections of this playbook share a set of principles that helped to inspire this work and how we envision its voluntary use, and then steps that media and sustainability leaders should consider as they embark on this journey.

Introducing the global media sustainability framework: helping address industry needs with a holistic array of voluntary and pre-competitive tools

A shared vision that helped shape this work

Across the industry, we have gathered input and best practices to build a set of voluntary standards, solutions and pre-competitive standards. This work has included best practices relating to media sustainability. It's important to consider this, as each member reviews this work and determines how they may pursue its implementation.

These are the core elements of thinking that have helped to shape the development of this system of voluntary industry frameworks and tools. Taken together, they are intended to equip the industry with the means of setting the stepping stones to improve the transparency, consistency, and accuracy of media emissions.

1. MEDIA OUTCOMES, MORE SUSTAINABLY

This work was crafted by media experts with input from climate science experts. The goal of this work is to provide support to the objective that core media goals – choosing channels to reach an audience to elicit a purchase decision – are achieved more sustainably.

2. AUDITED ACTIVITY-BASED EMISSIONS DATA IS THE IDEAL INPUT, AND DATA HACKS CAN HELP

In order to achieve accurate emissions measurement, reductions, optimizations or reporting for emissions accounting we must articulate best practice for data. That best practice for data is to be as close to actual energy consumption as possible. Further, this best practice focuses on activity-based emissions linked to media inventory or media products that are represented in the media campaigns. Finally, we recognize the need for the audit of media emissions calculations and reporting to drive the principles of accounting into this practice to accurately provide input for advertisers' scope 3 emissions.

3. VOLUNTARY FRAMEWORKS CAN PROMOTE PLURALITY AND INNOVATION

Voluntary frameworks that are flexible can drive interoperability and allow for plurality in providers and increase competition. The voluntary framework for media sustainability can provide a common foundation on definitions, modules for measurement, and communicating data granularity. These are core to enhancing transparency, which may foster increased competition and innovation.

4. EXPECTATIONS ON SUSTAINABILITY SHOULD SCALE BASED ON MARKET SHARE

Emissions reporting and the granular level of data produced should be cognizant of the size of the media organization. These are principles in several regulatory and co-regulatory schema. Most notably, we see this represented in the EC CSRD. These same sensibilities can be a useful way for us to consider how media stakeholders produce data. Most importantly, small organizations, unable to produce emissions data based on size should not be penalized, and in instances such as these, alternatives like norms may be applied.

5. VOLUNTARY INDUSTRY STANDARDS AND TOOLS WILL CREATE A BASELINE THAT IS PRE-COMPETITIVE

In our research and consultations, we've uncovered limitations based on data and formula that have limited progress and driven some inaccuracies. In order to overcome that, we've identified that voluntary industry standards ranging from frameworks for quantification, formulae, and data that can help create a more transparent and even playing field.

6. INTEROPERABILITY AND TRANSPARENCY ARE NECESSARY FOR GLOBAL, SEAMLESS OPERATIONS

We endorse the multiplicity of providers and believe that this will ensure marketplace innovation. We also recognize that there are limitations to provider coverage, whether it is geographic or channel in nature, or in their scope of work with a marketer. In order to achieve near global coverage, for end users, we encourage industry stakeholders to consider how the ANZ GMSF can provide the means to ensure that outputs from different suppliers can be combined with limited manipulation.

7. VOLUNTARY STANDARDS PRESERVE FREEDOM TO ADAPT AND A MEANS TO DISCLOSE

All of the ANZ Global Media Sustainability Frameworks elements are voluntary and provide a foundational framework for individual organizations to consider when advancing their own goals of accurate, consistent, and rigorous measurement of media emissions. The voluntary nature of the framework elements can be applied thoroughly, partially, or used simply as a means to compare methodologies. We believe in giving industry participants choice in how to use each part of the framework, and that in referencing the framework, industry participants will have transparency at a minimum.

Getting started – some insights and best practices from trailblazers

In the development of the GMSF, we've been fortunate to learn from key media leaders at advertisers and media sustainability specialists at media agencies, solutions providers, and industry associations. In our discussions and interviews we've been able to identify some insights from these trailblazers to share with leaders just starting out on their journey.

Top Tips

Link media sustainability to the broader agenda, and secure executive buy-in	Media leaders who have embarked on the sustainability agenda have tethered it to the broader organization sustainability strategy, given that for many organizations media placement is categorized as scope 3 emissions (e.g., indirect emissions from business suppliers). As media emissions may be a smaller part of the overall footprint of an organization, it's important to consider how media emissions measurement and reduction fits within the overall organizational sustainability strategy. Further, it is essential that advertisers consider executive buy-in from key roles such as the Chief Marketing Officer and the Chief Sustainability Officer.
Understand where marketing and media fit in	Understand where the marketing function fits within your larger enterprise and made sure to understand how media as a key marketing investment plays a role – ranging from contracting with agencies to purchasing media inventory. This top-down drivers analysis helps to develop an understanding of emissions from the media function and can be an essential corner stone in the media sustainability journey.
Create a cross-company understanding of your goals	Transparency of media sustainability goals and ambitions is core to managing a partner ecosystem that is diverse, ranging from agencies to media sellers to technology and data providers. Media leaders have shared overall objectives and expectations with key media partners as a means of delivering on a range of needs spanning emissions data reporting to understanding media suppliers emissions reduction targets. The trailblazers we spoke to view their media sustainability roadmap as an open, transparent tool for communication and collaboration with partners.

Use data to benchmark your position	Start off the process by developing an initial benchmark to discover what can be measured and what your emissions currently are. It's important to establish an initial reference point and it's equally important to ensure that the initial read has an honest question as to what can be measured and not at the current time, and to what level of accuracy.
Identify 'quick wins' and tactical steps	We've gathered some industry wisdom already to help you kickstart your sustainability journey. Click here to access the 2023 ANZ Action Guide.
Let materiality in investment and emissions help set priorities	Focusing in on materiality in media – significant areas for investment or emissions – in terms of markets, channels, or partners can help establish a disciplined structure of where to focus and what outcomes to pursue. The leading ad buyers at marketers and agencies have used a framework to help determine areas for focused conversation that fit into a series of criteria relative to size of investment (market, channels, partners), and if known, relative to size of emissions.
Raise longer term ambitions	Share long-term objective with your key partners. This is not dissimilar to the way purchasing or procurement teams function in sharing their organizational objectives on a certain topic and ensuring that their supply partners can help drive transparency or in some cases support that objective, if appropriate. Being able to communicate mutual expectations is a key way for partners to establish transparency.
Challenge key partners to consider their roles	Encourage others to understand their own sustainability work. Internally at an advertiser for instance, this could be a global media lead encouraging their market-level leaders to consider agency and media supplier relationships. Externally at a media agency for instance, this could be engaging with key media suppliers or intermediaries to consider individual organizational sustainability reporting. The common theme of this best practice is having transparent conversations on the media sustainability initiative with key partners and to ask how they can support a shared objective, within reason.
Appropriately manage the media sustainability journey, internally and externally	Media leaders who are sustainability minded, have repeatedly shared that media must still be held to the commercial objective of reaching consumers and driving a sales response, and media sustainability should encourage you to consider the emissions of those activities – not to undermine the goals. Our best practice cohort use this tip as a reminder to avoid any misuse or overuse of the data and the tools at hand to unknowingly undermine media or create uneven or unfair expectations of media supply partners. Media sustainability experts have reflected that they must balance this new specialism against departmental business objectives.

Review Process

The ANZ Media Sustainability Community entertained a series of challenges based on qualitative and quantitative research. Based on the insights, we launched a series of Working Groups. Volunteers from the Community help to power up the various Working Groups, and are free to define the objectives and milestones, and then pursue recommendations on voluntary industry frameworks. These recommendations were then run through a series of reviews:

Steer Team Review	To ensure that recommendations help the media planning, buying, and reporting process, and that recommendations are consistent with industry practices
Climate Science Expert Group Review	To ensure that recommendations leverage sustainability best practices from other sectors, and that recommendations adhere to environmental science expertise
External Legal Council Review	To ensure that the framework is voluntary and pre-competitive, and recommendations adhere comply with competition law and promote transparency

Component parts and benefits:

Wave 1: Challenges, recommendations and resources

The Review Process highlighted the need to build the GMSF in stages. The first wave of recommendations are as follows:

Challenge Observed	Working Group	Benefits of Recommendation	Resources available in first iteration
There is a wide range of variability in how media emissions are measured across various stakeholders	Metric + Methodology	Consistent framework to measure GHG emissions across 6 media types thereby improving accuracy and rigour	Channel Emissions Frameworks: TV/Video, Digital, Audio/Radio, Print, Out-of-Home, Cinema Media Emissions Formula: TV/Video, Digital, Out-of-Home
There is fragmentation of requests, varied understanding, that challenge what and how media emissions data is collected and shared	Data Request + Access	Efficient mechanism to collect first party emissions data from media sellers and value chain partners	Media Emissions Data Request Form: Enterprise level
There is a lack of understanding of marketplace solutions and where they fit into the media process	Sustainability Solutions Transparency	Consistent framework to disclose services, data sources, and scientific oversight of media sustainability service providers	Media Sustainability Solutions Transparency Form
There should be a consistent means of understanding how voluntary industry frameworks are adopted and improve practices	Monitoring	Voluntary tools to map the progress of solutions across industry stakeholders	Media Sustainability Framework Adoption Grid

Waves 2 and 3: Challenges, recommendations and resources

There are some solutions that will take a longer time frame to develop, and we must allow those working groups the time to explore those frameworks further. We anticipate that these solutions will be introduced in Wave 2 and Wave 3 of the deliverables.

Challenge Observed	Working Group	Benefits of Recommendation	Resources to be included in iteration 2
There is a wide range of variability in how media emissions are measured across various stakeholders	Metric + Methodology	Consistent framework to measure GHG emissions across 6 media types thereby improving accuracy and rigour	Media Emissions Formula: Audio/Radio, Print, Cinema
There is fragmentation and a lack of priority in how media emissions data is collected and shared	Data Request + Access	Efficient mechanism to collect first party emissions data from media sellers and value chain partners	Media Emissions Data Request Form: Channel emissions requests Media Emissions Data Exchange Recommendation
There should be a way to establish trust in how emissions data is used in the media process, aligned with industry frameworks	Audit + Verification	Establishment of a series of audit standards that help drive transparency in the application of industry frameworks for the media process	Media Sustainability Audit Specifications (as recommended by independent auditors)

How do the solutions work together?

The tools will work together in order to create transparency, accuracy, and rigour in how media emissions measurement and reporting are managed.

Metrics + Methodology

Data Collection

Monitoring

Global Media Sustainability Framework

Solutions Transparency

Data Access

Audit + Verification

Additionally, each of the frameworks will have a channel-specific connection which will help drive increased specificity in how the channel is measured and what data is collected to assist in the measurement of it:

Channel Emissions Framework	Media Emissions Formula	Emissions Data Request	Emissions Data Hacks	Emissions Data Sources
Emissions factors to be counted in the placement of a media unit	Mathematical expression of the Channel Emissions Framework to calculate campaign emissions	Request of relevant first-party emissions data from media sellers + key intermediaries	Relevant guidance on challenges relative to data: missing, blunt, and equivalent	Relevant guidance on challenges relative to data: missing, blunt, and equivalent
• Consistent across channels • Scales based on data available • Functional unit-based	• Corresponds to media planning & buying pathways • Enables individual reporting	• Corresponds to functional units and inventory available for purchase	• Corresponds to functional units and material steps	• Aligns on recommended syndicated data sources for lifecycle assessment
Metric + Methodology		**Data request**		**Data Access**

In the subsequent chapters of this playbook, we go into solution-specific recommendations, who may want to consider using them, and when and how they should consider using them. The Global Media Sustainability Framework is a voluntary set of recommendations built from best practices and Working Group proposals. We encourage members and industry stakeholders to review each of these proposals and determine individually their relevance to their work. We respect individual corporations and their freedom to adopt frameworks, map to frameworks with their current process, or reject them.

What channel-specific frameworks are ready and what are the future plans?

The table below shows the channel-specific recommendations available in this release of the voluntary GMSF. The channel specific GMSF elements will evolve over time to reflect availability of data and also based on marketplace findings on the materiality of each measurement step.

	Digital	TV/ Video	OOH	Print	Radio/ Audio	Cinema
Channel Emissions Frameworks	v1.0	v1.0	v1.0	v1.0	v1.0	v0.5
Media Emissions Formulae	v1.0	v1.0	v1.0	Wave 2	Wave 2	Wave 2
Emissions Data Request	Wave 2	Wave 3	Wave 3	Wave 3	Wave 3	Wave 3
Emissions Data Hacks	Wave 2	Wave 3	Wave 3	Wave 3	Wave 3	Wave 3
Emissions Data Sources	Wave 2	Wave 3	Wave 3	Wave 3	Wave 3	Wave 3

Recommendations and Principles: Views from our Working Groups 2024

Recommendation 1. Metrics + Methodology: A voluntary consistent framework to measure GHG emissions across 6 media types thereby improving carbon accounting accuracy and rigour

What is the context and purpose of this recommendation?

Variability in media emissions is stemming from the bounds of measurement, the formulae used, and the source data. Advertising stakeholders could use a common framework to enhance the comparability and compatibility of data.

What is this recommendation and what questions does it help answer?

The recommendation answers the following key questions:

- What are the channel boundaries of carbon measurement for each media channel?
- What are the key functional unit steps in each phase?
- What is the unit of measurement for each functional unit step?
- What data is required for the calculation?
- What is the mathematical formula?

What is included in the recommendation?

The current recommendation includes the following channel-specific components:

Digital	Channel Emissions Framework Channel Emissions Formulae	Print	Channel Emissions Framework
TV/Video	Channel Emissions Framework Channel Emissions Formulae	Radio/Audio	Channel Emissions Framework
Out-of-Home	Channel Emissions Framework Channel Emissions Formulae	Cinema	Channel Emissions Framework

What is coming next?

Channel-specific Emissions Formulae (Print, Radio/Audio, Cinema)

Channel-specific data requests

Channel-specific guidance on data hacks

Channel-specific guidance on data sources

Recommendation 2. Data Request: Efficient mechanism to collect first party emissions data from media sellers and value chain partners

What is the context and purpose of this recommendation?	In order to facilitate the collection of nonconfidential data essential for the media emissions measurement and reporting there must be a common and consistent data request form that corresponds to the Channel Emissions Formulae. This is a voluntary data form that media industry stakeholders may use for emissions reporting and or emissions data requests.
What is this recommendation and what questions does it help answer?	Efficient mechanism to collect first party emissions data from media sellers and value chain partners. • What first-party emissions data is needed to help measure the environmental impact of a media placement? • How can we efficiently and consistently collect and share the data that is needed for the channel emissions formulae?
What is included in the recommendation?	A voluntary data request and reporting template that asks key organizational information that is not commercially sensitive on sustainability efforts.
What is coming next?	Additional voluntary nonconfidential channel-specific data requests based on the channel emissions formulae.
Where does this recommendation fit into the media process?	This voluntary request form may be used during the following steps in the media cycle: 1. On a set regular interval (e.g. end-of-year reporting, an annual media planning cycle, or post-activity reporting cycle). 2. On a campaign-specific interval (e.g. ahead of or after).
What types of organizations will use the recommendation and how?	• Media sellers may use this as a self-reporting template to answer media agency, advertiser, or sustainability solution provider requests (e.g. RFIs). • Media buyers (agencies or advertisers) or sustainability solutions providers may use this form or its questions to request nonconfidential sustainability metrics from media supply partners.
What considerations should be taken into account?	Organizations using this form should not publish company or commercially sensitive information or any other confidential information. Organizations should make sure that they are compliant with their own internal compliance processes to ensure data accuracy and confidentiality policies are adhered to.

Click here for the full enterprise level data collection form

Recommendation 3. Media Sustainability Solutions Transparency: Consistent framework to disclose services, data sources, and scientific oversight of media sustainability service providers

What is the context and purpose of this recommendation?	As the landscape of media sustainability solutions evolves, stakeholders will need to understand the coverage and methods they employ; end users may want to understand what functions they fulfill and what standards they use.
What is this recommendation and what questions does it help answer?	The Media Sustainability Solutions Transparency Form is a voluntary disclosure form meant to create a common framework for media sustainability solutions providers to help communicate what and how their services operate and bridge an understanding gap between provider and stakeholders (whether the end customer being a marketer or an inputter being a publisher).
What is included in the recommendation?	A voluntary disclosure form that communicates the scope of services solutions providers.
What is coming next?	Additional voluntary nonconfidential channel-specific data requests based on the channel emissions formulae.
Where does this recommendation fit into the media process?	This request form sits outside the media campaign cycle and could be more appropriate in the annual planning and partner selection cycle.
What types of organizations will use the recommendation and how?	• Media sustainability solutions (specialists or agencies) providers may use this form as a way of disclosing service overviews to partners (advertisers, agencies, or publishers) proactively. • Media partners (advertisers, agencies, or publishers) may use this form to request disclosure from media sustainability solutions (specialists or agencies).
What considerations should be taken into account?	Organizations using this form should not publish company or commercially sensitive information or confidential information. Organizations should consult with their own internal compliance processes to ensure data accuracy and confidentiality policies are adhered to.

Click here for the full enterprise level data collection form

Recommendation 4. Monitoring: Voluntary framework to measure the progress of solutions across industry stakeholders

What is the context and purpose of this recommendation?	Marketplace feedback and the degree to which voluntary industry frameworks are relied on, is important to understand whether or not they are helpful and whether they may need updates. This framework creates a company-specific reporting template to understand levels of voluntary adoption of key tools and steps.
What is this recommendation and what questions does it help answer?	Efficient mechanism to collect first party emissions data from media sellers and value chain partners. • What elements of the voluntary GMSF has the partner chosen to adopt? • What is the relative penetration of each voluntary GMSF recommendation, and which ones are most often adopted?
What is included in the recommendation?	A voluntary monitoring framework that covers key elements of the GMSF and the major steps and solutions considered therein.
What is coming next?	Official circulation to relevant stakeholders in January, with a due date of April, with reporting for June.
Where does this recommendation fit into the media process?	This solution sits outside the media process and is designed to help us learn about the effectiveness of their voluntary industry frameworks.
What types of organizations will use the recommendation and how?	All relevant media partners involved in Ad Net Zero will be invited to fill out a monitoring template on the cycle expressed above.
What considerations should be taken into account?	Organizations using this form should not publish company or commercially sensitive information or confidential information. Organizations should consult with their own internal compliance processes to ensure data accuracy and confidentiality policies are adhered to.

Click here for the full enterprise level data collection form

Where does this recommendation fit into the media process?	**The Metrics + Methodology recommendations are calculations solutions that can fit into a series of steps within the media process:** 1. **Pre-or-post campaign emissions reporting and GHG calculation:** • The Metrics + Methodology elements can be used for pre-campaign data collection to help ad sellers report out on the emissions from established media inventories • The Metrics + Methodology elements can be used for post-campaign emissions reporting or GHG accounting for activities used in 2. **In-campaign planning or buying:** The Metrics + Methodology elements can be used to assist with steps in the media planning (emissions forecasting) or in media buying (placement optimization) however, these are dependent on provider tools (agency or specialist)
What types of organizations will use the recommendation and how?	• Media sellers may consider using the framework to provide customers (agencies or advertisers) with post-activity reporting • Media sustainability providers and media agencies may consider using the framework to calculate campaigns during the development process • Media buyers (advertisers or agencies) may consider using the framework to calculate campaigns after they are completed • Media sustainability providers may consider using the framework to provide partners with emissions measurement or accounting services
What considerations should be taken into account?	• The frameworks will evolve over time as data become more granular • The frameworks' accuracy and reliability will improve as their implementation can be audited • The frameworks may be modified in their adoption by providers, who based on best practices, may consider disclosing how

Strategic Principles: Calculation and Data

1. Phases of media campaigns for quantification

A media campaign will likely involve three major phases:

	In-Scope	Out-of-Scope
Creation	Emissions from physical manipulation of creative assets for media placement Emissions from traffic out of creative	Emissions from the creation of advertising content [covered in calculators like Ecoprod, AdGreen] Emissions from the creation of programming content
Distribution	Emissions from the steps associated with media selection Emissions from ad placement [inclusive of buy-side and sell-side steps]	
Consumption	Emissions from direct energy consumed to receive ads Embedded emissions from creation and disposal of associated technology [as a proportion of total lifespan]	

These phases are common frameworks across all media channels and allows for industry stakeholders to treat each channel without bias.

2. Levels of Data Specificity

In addition to emphasizing the use of activity based primary data to reduce reliance on data hacks (e.g., CO2e/$), another significant step in our work is a voluntary framework that helps to categorize the levels of emissions data available and the precision that they have relative to the media placement.

The voluntary framework below helps to reduce a significant level of uncertainty and improve transparency:

Level	Definition	Notes
Level 0: Assumed	Emissions data not available and a model is assumed for the media placement	Ideally this should consider normative averages based on a pool of similar businesses
Level 1: Enterprise	Emissions data is only available at the total organizational level spanning multiple markets	Steps towards appropriation recommended in the Technical Notes may be considered
Level 2: Market-level	Emissions data is available for the organization and within a single geography	Steps towards appropriation recommended in the Technical Notes may be considered
Level 3: Business Unit	Emissions data is available to a single advertising-supporting business unit and within a single geography	Steps towards appropriation recommended in the Technical Notes may be considered
Level 4: Media Product Level	Emissions data is available based on individual ad units and is as close to activity-based energy consumption	

3. Channel Specific Steps: Workflows, Emissions Frameworks & Formulae

Based on the third-party blinded survey work pursued by Ad Net Zero via PromoVeritas, we were able to identify core steps for ad messages to consider. We also onboarded input from volunteers in the Metrics + Methodology Working Group, and volunteered frameworks for consideration.

These inputs are distilled into three core components:

Channel Emissions Workflows	Graphical detail of the steps an ad message takes throughout the 3 Phases, specific to buying and transmission methods
Channel Emissions Frameworks	Table detail of the functional units with a clear definition of the emissions, detailing source of emissions data
Channel Emissions Formula	Mathematical calculation instructions on how to manipulate emissions data inputs to reflect media emissions guidelines

In the subsequent Technical Guide pages we present the outputs. These outputs were developed as recommendations from the Working Group, which were then socialized with relevant channel-level trade bodies and their boards, and then with media sustainability specialist companies. In total we consulted with over 100 companies in distilling recommended best practices.

Technical Principles: Calculation and Data

Calculation Principles

Principles for GHG emissions measurement vary between standards, but are generally underpinned by consistent themes, which should be considered and applied when considering the frameworks and formulae within this Global Media Sustainability Framework. This Global Media Sustainability Framework has been created in order to support several such principles including transparency, completeness and consistency. These principles enable users of the data, produced by following this standard, to have confidence as the data generated is aligned with standards and best practices that are generally followed in GHG accounting. Users of this information likely rely on similar approaches to calculate the GHG emissions from other business activities, so having consistency across all data sources is important. The below principles are key to both enterprise level accounting (e.g. the GHG Protocol, ISO 14064) which all companies should be already reporting, and GHG lifecycle assessments (e.g. the GHG Protocol Product Life Cycle Accounting and Reporting Standard, ISO 14067), the focus of the Framework.

The GHG Protocol Policy and Action Standard (Chapter 4) lays out the following accounting and reporting principles:

Relevance: Ensure the GHG assessment appropriately reflects the GHG effects of the policy or action and serves the decision-making needs of users and stakeholders—both internal and external to the reporting entity. Users should apply the principle of relevance when selecting the desired level of accuracy and completeness among a range of methodological options.

Completeness: Include all significant GHG effects, sources, and sinks in the GHG assessment boundary. Disclose and justify any specific exclusions.

Consistency: Use consistent accounting approaches, data collection methods, and calculation methods based on established climate standards to allow for meaningful performance tracking over time. Transparently document any changes to the data, GHG assessment boundary, methods, or any other relevant factors in the time series. A key objective of this Framework is to provide an approach that is consistent with how advertisers calculate emissions for all of their other activities so that the emissions based on this Framework can be directly included into advertisers' scope 3 inventories.

Transparency: Provide clear and complete information for internal and external reviewers to assess the credibility and reliability of the results. Disclose all relevant methods, data sources, calculations, assumptions, and uncertainties. Disclose the processes, procedures, and limitations of the GHG assessment in a clear, factual, neutral, and understandable manner through an audit trail with clear documentation. The information should be sufficient to enable a party external to the GHG assessment process to derive the same results if provided with the same source data.

Accuracy: Ensure that the estimated change in GHG emissions and removals is systematically neither over nor under actual values, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users and stakeholders to make appropriate and informed decisions with reasonable confidence as to the integrity of the reported information. Accuracy should be pursued as far as possible, but once uncertainty can no longer be practically reduced, conservative estimates should be used.

Corporate Emissions Approach:

Where formulae include allocation of emissions overhead, this should as best practice, consider emissions that are relevant to the activity. Acknowledging that this level of apportionment is not always possible nor do organizations always have the required level of data available, the following priority levels have been defined. Following the principle of transparency in this process is critical so that users of the data understand how the allocation assumptions have been made and the quality and completeness of the input data.

Priority	Description
First	Allocated corporate emissions, including scope 1, scope 2 and scope 3 emissions, which relate to activities relevant to the lifecycle of the [media] being assessed. For example, direct and indirect emissions arising from divisions or departments of the organizations that are involved in activities relevant of the [media] being assessed.
Second	Allocated corporate emissions of the organization, including total scope 1, scope 2 and all relevant scope 3 categories.
Third	Allocated corporate emissions of the organization including total scope 1, scope 2 and limited scope 3 categories.
Four	Allocated corporate emissions of the organization including total scope 1 and scope 2.

Materiality & Scaling Factors

Materiality:

This represents expected carbon weight in usual cases.

+: this formula/phase is expected to have a small impact (less than 5% of the anticipated total emissions) on the results

+++: The formula/phase is expected to have a big part of global GHG emissions.

Under specific conditions, certain phases may be more significant than usual. This is therefore merely indicative to provide first guidance of where to put the most effort into collecting granular data.

Scaling factors:

These allow the identification of inputs which impact the result of each formula, given the modelling and allocations realized in the current state. For each formula, scaling factors are specified.

These aspects are now covered qualitatively.

Future data collection steps will help to identify which parts are more material and which parameters have a strong sensibility on results.

Data Quality & Data Hacks:

Data Quality:

- In order to estimate emissions in the most accurate way possible, it's important to collect the best available data.

- The preferred type of data should be supplier-specific primary data, followed by secondary data involving estimates where primary data is not available.

- Primary data: data which is collected or directly measured within the supply chain and can be converted into CO2e emissions through application of conversion factors without having to first apply estimates. For example, litres of fuel consumed; kWh of electricity used.

- Secondary data: data which requires the application of assumptions or estimations before conversion into CO2e emissions. This might involve using financial data, or extrapolation using benchmarks from industry data. For example, spend on public transport or estimating energy use from floor area of an office. Secondary data and methods of estimation should be from credible and substantiated sources, and additionally be conservative to avoid understatement.

Uncertainty:

- The use of secondary data reduces the overall accuracy of the subject's footprint and may make reduction efforts difficult to plan and quantify.

- Where secondary data or estimation is used, efforts should be made to increase the provision of primary data over time.

- Material emissions sources and those with high emissions intensity should be prioritized for data collection efforts.

- However, the goal of GHG emission quantification is to identify levers of action to reduce the carbon footprint. It is to keep in mind that there will always be some uncertainty in calculation which will not prevent actors from identifying actions.

Data hacks:

Data hacks are associated with formulae to calculate emissions in the absence of reasonable data/data quality. These can include industry averages, "rules of thumb" and other estimation techniques. They will be completed over time after working with the industry. Examples will also be added in the future to facilitate understanding of concrete application of formula.

(Emissions factors/Conversion) factors

- Best practice and commonly used conversion factors are included within the GMSF and should be used wherever possible.

- Where the referenced conversion factors within the GMSF are not deemed appropriate or aligned to the media channel in question, or a required conversion factor is not available, alternative factors may be applied.

- Conversion factors must be from credible sources and relevant to the emissions source, including consideration of geographical reference and date of publication.

- Publicly available and easily accessible conversion factors should be prioritized over those which require a license or are not easily accessible.

- Where proxy conversion factors are required in the absence of a complete match, or there is a choice between multiple conversion factors which are deemed appropriate, the more prudent emissions factor should be used, i.e. the factor which leads to the higher CO2e figure to avoid understatement.

Market-based and location-based methods for electricity use

- There are two methods for reporting of emissions from the use of electricity:

  - **Location-based:** emissions associated with the electricity consumed, according to the average emission intensity of the local grid.

  - **Market-based:** emissions associated with the electricity that an organization purchases, according to the contracts it has in place, such as: supplier-specific tariffs and fuel mix, including renewable tariffs; Power Purchase Agreements (PPAs); application of Energy Attribute Certificates (EACs); Renewable Energy Certificates (RECs) and the grid residual mix emissions factor.

- Both location-based and market-based methods are useful for organizations to identify emissions reductions opportunities through a combination of operational efficiency and responsible purchasing decisions.

- When calculating emissions of media channels with respect to electricity, the location-based method must be used. Users may also report results using the market-based method to demonstrate how renewable energy has been applied to the value chain.

- Market-based method data must be documented to demonstrate it meets the Scope 2 Quality Criteria established within the GHG Protocol Scope 2 Guidance.

- The location-based method is required as a minimum in order to allow for greater consistency and comparability of results.

Location & market-based emission factors

2 methods for reporting of emissions from the use of electricity

LOCATION-BASED	MARKET-BASED
Emissions associated with the electricity consumed, according to the average emission intensity of the local grid.	Emissions associated with the electricity that an organization purchases, according to the contracts it has in place, such as: Power Purchase Agreements (PPAs); application of Energy Attribute Certificates (EACs) or Renewable Energy Certificates (RECs); and the grid residual mix emissions factor.
• Allow greater consistency and comparability of results. • Method that shall be used when calculating emissions.	• Must be documented to demonstrate it meets the Scope 2 Quality Criteria established within the GHG Protocol Scope 2 Guidance. • Method that can be used additionally to report to demonstrate how renewable energy has been applied to the value chain.

The Global Media Sustainability Framework 2024: Workflows, Frameworks and Formulae

Digital: Channel Emissions Workflows, Channel Emissions Framework, Channel Emissions Formula

Channel Emissions Workflow: Digital v 1.0
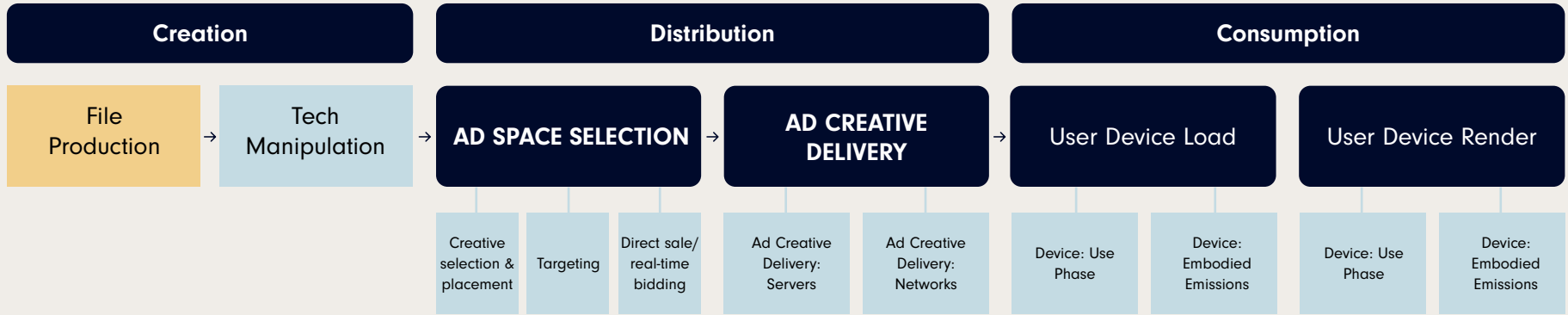
Creation		Distribution		Consumption	
File Production →	Tech Manipulation →	**AD SPACE SELECTION** →	**AD CREATIVE DELIVERY** →	User Device Load	User Device Render

| | | Creative selection & placement | Targeting | Direct sale/ real-time bidding | Ad Creative Delivery: Servers | Ad Creative Delivery: Networks | Device: Use Phase | Device: Embodied Emissions | Device: Use Phase | Device: Embodied Emissions |

Corporate emissions overhead (of all actors in the value chain)

Excluded from the system boundaries of this framework.

Included in the system boundaries

Channel Emissions Framework and Formula: Digital V.1.0

Phase	Step & sub-step		Physical processes involved	Formula type	Scaling factors	Expected materiality	Formulae V1	Accepted Alternative	Expected data hacks for V1	Comments
CREATION	Tech Manipulation (Multivariant Creative)	Creative storage	Additional server storage for multiple volumes of assets for the purpose of distribution.	Digital service overhead	• Number and size of assets • Storage duration	Low	$\sum_{\text{Number of assets}}$ *(size of asset (kB) ∗time stored (yr)* *∗ carbon impact of storage[3] (kgCO2e/kB/yr)* *∗allocation factor for the campaign[4] (%))*	/	Not using this formula yet, as part of the storage is expected to be accounted with the server transmission formula of Ad creative delivery phase (simplification).	Additional storage impacts will be accounted for, however it is expected to be hard to isolate this type of data, therefore a generic formula was derived from the server formula; it is expected to be covered by a global server emission factor. In the future, this could also account for unused assets and multiple storage.
		Creative transcoding	Server processing for multiple volumes of assets for the purpose of distribution.	Digital service overhead	/	/	/		/	No formulas covers this specific topic. However, for V1 a tweak has been included partially in the Ad Creative Delivery section.
DISTRIBUTION	Ad Space Selection	Creative Selection & Placement	Planning of creative to go on specific inventory within a marketplace	Corporate overhead	/	/	/		/	Included within corporate emissions overhead.
		Targeting	Digital services used for all targeting activities	Use phase & Embodied	/	/	/		/	Whatever targeting activities not reflected in the allocated corporate overhead emissions, can be addressed in future updates.
		Direct sale	Exchange of campaign booking between ad buyer and media seller / owner	Use phase & Embodied	/	Low	Same formula as real-time bidding. • If a segment of inventory is set aside exclusively for direct sale: only one activated path to be taken into account • If not: accounted as programmatic (total number of activated path).		/	Simplified version only accounting for programmatic direct. Corporate emissions accounted for in the global corporate emissions overhead.
	Ad Space Selection	Real-time bidding	Servers processing transmission through automated buying process (SSP/DSP…)	Use Phase	• Number of impressions • Number of paths / number of requests • Calculation time	Low to medium	*Impressions ∗ Number of potential active paths per impression[5]* *∗ Avails ratio ∗ (1 + Requests ratio) ∗ (1 + Responses ratio)[6]* *∗ Time of calculation per bid (h)* *∗ Compute ratio allocated to bid processing (compute used by SSP/DSP incl. machine-learning) and reporting/analytics[7] (%)* *∗ Total relevant infrastructure power incl. PUE (W)* *∗ Carbon intensity of electricity (kgCO2e/kWh)* *∗(1 + overhead of other mutualized server resources ratio[8])*	In case of real data of number of avails, bid requests and bid responses per impression, first part of formula could be overridden: *Number of potential active paths per impression* *∗ Avails ratio* *∗ (1 + Requests ratio)* *∗ (1 + Responses ratio)* Replaced by : *(Number of avails* *+ Number of bid requests* *+ Number of bid responses)*	• Activated paths per impression : can be determined directly or estimated through global number of potential paths x average of activated paths (%). • Compute ratio allocated to bid processing (compute used by SSP/DSP incl. machine-learning) and analytics: Dedicated vCPUs share of total infrastructure can be a good proxy as most of infrastructure are distributed and highly virtualized. Infrastructure costs breakdown is also a good lead in case physical data is not available. • Time of calculation per bid: Market average likely to be used as this is a highly granular information. • Data transferred by request type : Can be estimated with bid request or response size + overhead payload of additional assets.	On-device advertising is also identified as having an impact on Ad Space Selection processing, but however not modelized in V1.
				Embodied		Low to medium	*Impressions ∗ Number of potential active paths per impression[5]* *∗ Avails ratio ∗ (1 + Requests ratio) ∗ (1 + Responses ratio)[6]* *∗ Time of calculation per bid (h)* *∗ Compute ratio allocated to bid processing (compute used by SSP/DSP incl. machine-learning) and reporting/analytics[7] (%)* *∗ EF manufacturing and EOL of total relevant infrastructure (kgCO2e)* */ Average lifetime of equipment (s)* *∗(1 + overhead of other mutualized server resources ratio[8])*			
			Networks transmission through automated buying process (SSP/DSP…)	Use Phase	• Number of impressions • Number of paths / number of requests • Data transferred by request type	Low to medium	*Impressions ∗ Number of potential active paths per impression[5]* *∗ Avails ratio ∗ (1 + Requests ratio) ∗ (1 + Responses ratio)[6]* *∗ Data transferred by request type[9] (kB)* *∗ Server-to-server networks energy efficiency according to network type and country[10] (kWh/kB)* *∗ Carbon intensity of electricity (kgCO2e/kWh)*			
				Embodied		Low to medium	*Impressions ∗ Number of potential active paths per impression[5]* *∗ Avails ratio ∗ (1 + Requests ratio) ∗ (1 + Responses ratio)[6]* *∗ Data transferred by request type[9] (kB)* *∗ EF manufacturing & EOL amortization networks according to network type and country10 (kgCO2e/kB)*			
	Ad Creative Delivery	Creative transmission	Ad Servers / CDN edge node processing of ad delivery on display, social, or search	Use phase	• Number of impressions • Output data transmitted (incl. file size) • Share of content delivered locally (CDN)	Medium to high	*Impressions ∗ total server output data per impression[11] (kB)* $\sum_{\text{Number of infrastructures}}$ *(Breakdown of content delivered by ad servers vs. edge nodes[12] (%)* *∗ datacenter or edge nodes energy of efficiency including PUE (kWh/kB output)* *∗ carbon intensity of electricity (kgCO2e/kWh))[13]*		• Total server output data per impression / Total data transferred on network per impression: For static format: file size proxy + payload overhead of additional assets For video format: portion of file size loaded (incl. buffer) + payload overhead of additional assets • Breakdown of content delivered by ad servers vs. edge nodes: Cache hit ratio of CDN can be a good lead	Conventional network model for digital networks.
				Embodied		Medium to high	*Impressions ∗ total server output data per impression[11] (kB)* $\sum_{\text{Number of infrastructures}}$ *(Breakdown of content delivered by ad servers vs. edge nodes[12] (%)* *∗ EF manufacturing and EOL of total relevant infrastructure (kgCO2e)* */ infrastructure output bandwidth (kB/s)* */ average lifetime infrastructure equipment(s))[11]*			
			Networks transmission of ad delivery from ad server / CDN edge node to user network as display, social, or search	Use phase		Medium to high	*Impressions ∗ total data transferred on network per impression[11] (kB)* $\sum_{\text{Number of network type}}$ *(consumption breakdown between types of network (%)* *∗ energy efficiency according to network type[14] and country (kWh/kB))* $\sum_{\text{Number of infrastructures}}$ *(consumption breakdown between countries of servers/edges nodes[12] and & users(%)* *∗ carbon intensity of electricity (kgCO2e/kWh))*			
				Embodied		Medium to high	*Impressions ∗ total data transferred on network per impression[11] (kB)* $\sum_{\text{Number of network type}}$ *(consumption breakdown between types of network (%)* *∗ EF manufacturing & EOL amortization networks according to network type[14] and country (kgCO2e/kB)")[11]*			

CONSUMPTION	Device Display	User device load	Download / stream of creative to the user device. Includes embodied emissions of devices.	Use phase	• Data transferred (incl. file size) • Device type	Low	$* \sum_{Devices^{17}}$	*Impressions∗Data transferred per impression[15](kB) / Broadband speed breakdown by country and by network type (kB/s)* *(Device mix by type and country (%)* *∗Device power consumption to maintain active connection[16] (W)* *∗time conversion ratio (h/s)* *∗carbon intensity of electricity (kgCO2e/kWh))*	Load and render power of devices are expected not to be available, therefore the alternative is to account for full device power and lifecycle and not separate those two phases. Replace: *Device render power consumption* By: *Device total power consumption*	Not using this formula yet (see opposite).	Time to load (s) is determined by the first two parameters. Short time is expected therefore materiality is expected to be low. However, it might become more material in time with on-device advertising is also identified as having a growing impact on loading, but not modeled in V1, and it also needs to be confirmed.
				Embodied		Low	$* \sum_{Devices^{17}}$	*Impressions∗Data transferred per impression[15](kB) / Broadband speed breakdown by country and by network type (kB/s)* *(Device mix by type and country (%)* *∗EF manufacturing & and EOL amortization of devices, share of connectivity[18] (kgCO2e/unit)* */ total active used time over lifetime by device type (s of active use over full lifetime)))*		Not using this formula yet (see opposite).	
		User device render	Render and display of creative on the user device. Includes embodied emissions of devices.	Use phase	• Time displayed • Device type	High	$* \sum_{Devices^{17}}$	*Impressions∗Time displayed on device per impression(s)* *(Device mix by type and country (%)* *∗Time displayed on device (s)* *∗Device render power consumption[16] (W)* *∗time conversion ratio (h/s)* *∗carbon intensity of electricity (kgCO2e/kWh))*	Replace: EF manufacturing & and EOL amortization of devices, share of render By: EF manufacturing & and EOL total amortization of devices	Use full device power in the formula.	
				Embodied		High	$* \sum_{Devices^{17}}$	*Impressions∗Time displayed on device per impression(s)* *(Device mix by type and country (%)* *∗Time displayed on device (s)* *∗EF manufacturing & and EOL amortization of devices, share of render[19] (kgCO2e/unit)* */ total active used time over lifetime by device type (s of active use over full lifetime))*		Use full device EF in the formula. Total active used time over lifetime by device type is the result of daily use x lifetime in years.	
ALL	Corporate emissions overhead		Allocated organizational emissions attributed to the specific campaign across ALL entities in the campaign value chain.	Corporate overhead	Campaign revenue	High	$\sum_{Number\ of\ entities}$	*Total relevant annual corporate emissions[1](kgCO2e)∗allocation factor for the campaign[2])*		/	Every organization in the value chain should be reporting their verified enterprise GHG emissions inventory annually to ensure reasonable data quality at the enterprise level. These enterprise emissions should then be allocated to specific ad campaigns based on either a kg CO2e/$ or kg CO2e/person hour emissions factor.

Footnotes for digital

Corporate emissions overhead:

[1]See corporate emissions section. Ideally, relevant emissions should be

considered (scope 1, 2, 3 covering additional corporate processes) and not account for emissions directly accounted for in the campaign direct emissions (servers...)

[2]Allocation factor for the campaign which may be calculated as a % either of revenue of the campaign/total revenue of the entity or person hours for the campaign/total annual person hours of the entity.

Tech Manipulation:

[3]Servers impact (that can be split by lifecycle phase) based on server type, efficiency and location (simplified formula).

[4]Storage of creative is likely to happen not for one campaign only, therefore an allocation factor for the campaign is needed and may be calculated as a % either of revenue of the campaign/total revenue of the entity or campaign volume (e.g. impressions) / volume of all campaigns where the assets were used.

Ad Space Selection (Real-time bidding):

[5]A potential path is a server-to-server-to-server link (e.g. exchange of request) between different nodes of the programmatic actors (publisher, SSPs, DSPs...). Not all potential paths are activated at each impression (note: ads.txt only accounts for some potential paths).

[6]Activated paths are a way to estimate number of real requests transmitted, after all optimization process, such as SPO and bid throttling, are implemented, which ultimately allow to account for servers and networks impacts.

To account for all these filtering and optimization techniques and avoid overestimating requests, 3 ratios are therefore used to represent the avails:requests:responses ratios. However, if actual data on requests number is available, previous assumptions can be overridden to work with the absolute number of avails, requests, and responses per impression.

[7]Portion of physical resources dedicated to bid processing, reporting, machine learning, analytics... is a share of total compute power. Dedicated CPUs or costs are a good lead.

[8]Modelizing additional mutualized infrastructure resources for other services and development activities. Value of the overhead will have to be determined in the data working group.

[9]Taking into account different sizes for avails, bid requests and bid responses (incl. all transferred assets).

[10]A substantial share of the requests can be treated within private networks, and all requests are server-to-server links (e.g. fixed networks).

Ad Creative Delivery:

[11]Ideally taking into account both:

- Real size of creative file transferred: file size depending on user device/screen size, network quality...

- Additional assets transmission: scripts...

[12]Popular contents with the local host's user base are temporarily cached on edge nodes, therefore delivered from a local data centre-like infrastructure (impact on carbon intensity of electricity). Country could usually be assumed to be the same as the user.

[13]Sigma to account for different environmental performances of ad servers and edge nodes, as well as location for use phase and computing power for embodied emissions (different server models/configuration end in different emissions).

[14]Accounting for different performances of networks (e.g. fixed vs mobile, global vs local), as well as country. Edge nodes / CDN also allow to win on the network part (local delivery).

Consumption:

[15]Ideally taking into account both:

- Real size of creative file transferred: file size depending on user device/screen size, buffer settings, network quality...

- Additional assets transmission: scripts...

[16]Additional studies are needed to fully model the difference of screen power (render) vs. active connection (load) so it is expected to be modelled globally.

[17]Devices list to be covered: any type of terminal that loads and/or displays digital ad creative content (laptops, tablets, smartphones, TVs...)

Avail Request → Bid Request ⇄ Bid Response
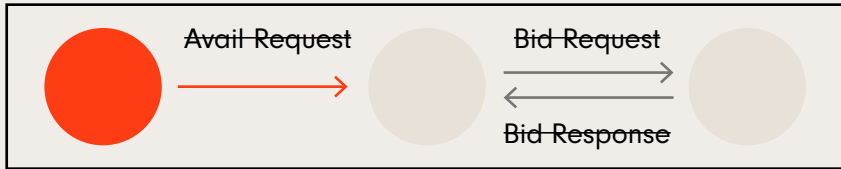
Avails Ratio: Taking into account avail not even sent (e.g. old link, SPO) even if potential path

Avail Request → Bid Request ⇄ Bid Response
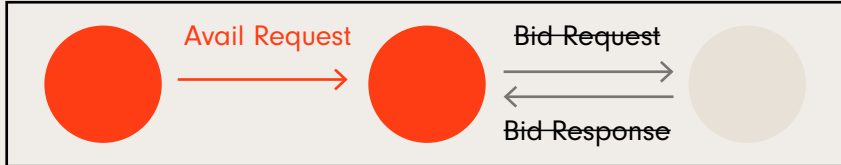
Requests Ratios: e.g. Taking into account bid request not sent after optimization (e.g. traffic shaping/bid throttling), usually on SSP side

Avail Request → Bid Request ⇄ Bid Response

Fully activated path

Avail Request → Bid Request ⇄ Bid Response
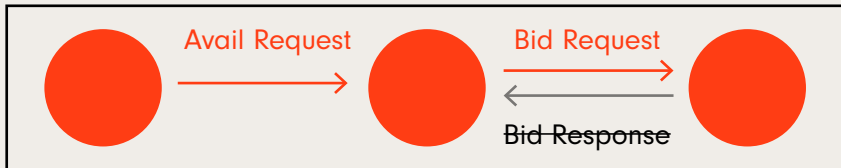
Responses Ratio: Taking into account bid response not always sent, usually on DSP side
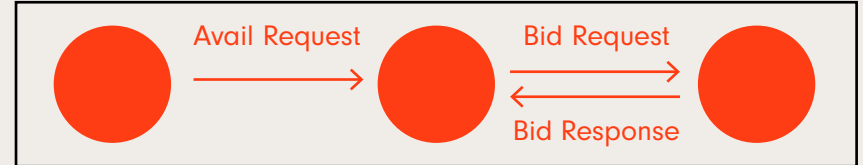
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TV / Video: Channel Emissions Workflows, Channel Emissions Framework & Channel Emissions Formula

Channel Emissions Workflow: Video / VOD v 1.0

Creation	Distribution	Consumption

File Production	→	Tech Manipulation	→	AD SPACE SELECTION	→	AD CREATIVE DELIVERY	→	User Device Load	User Device Render

| | | | | Creative selection & placement | Marketplace: Buying | Transformation and transfer: Servers | Transfer: Networks | Device: Use Phase | Device: Embodied Emissions | Device: Use Phase | Device: Embodied Emissions |

Corporate emissions overhead (of all actors in the value chain)

[1]3 different delivery type are identified are modelled in the formulae:
- Linear Broadcast (TV/SAT)
- Linear multicast (IPTV)
- Non-linear (& linear) unicast (OTT/CTV/VOD)

Excluded from the system boundaries of this framework.

Included in the system boundaries

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Channel Emissions Framework and Formula: TV / Video / V.1.0

Phase	Step & sub-step			Physical processes involved	Formula type	Scaling factors	Expected materiality	Formulae V1		Accepted alternatives	Expected data hacks for V1	Comments
CREATION	Tech Manipulation (Multivariant Creative)	Creative storage		Additional server storage for multiple volumes of assets for the purpose of distribution.	Digital service overhead	• Number and size of assets • Storage duration	Low	$\sum\limits_{\text{Number of assets}}$	*(size of asset (kB)* **time stored (yr)* **carbon impact of storage[1] (kgCO2e/kB/yr)* **allocation factor for the campaign[2] (%))*		Not using this formula yet, as part of the storage is expected to be accounted with the server transmission formula of Ad creative delivery phase (simplification).	Additional storage impacts will be accounted for, however it is expected to be hard to isolate this type of data, therefore a generic formula was derived from the server formula; it is expected to be covered by a global server emission factor. In the future, this could also account for unused assets and multiple storage.
		Creative transcoding		Server processing for multiple volumes of assets for the purpose of distribution.	Digital service overhead	/	/	/			/	No formulas covers this specific topic. However for V1 a tweak has been included partially in the Ad Creative Delivery section.
DISTRIBUTION	Ad Space Selection	Creative Selection & Placement		Planning of creative to go on specific inventory within a marketplace	Corporate overhead	/	/	/			/	Included within corporate emissions overhead.
		Market-place: Buying	Direct	Proportion of advertiser & media owner's corporate emissions for buying process	Corporate overhead	/	/	/			/	
			Indirect	Proportion of agency/ specialist & media owner's corporate emissions for buying process	Corporate overhead	/	/	/			/	
			Programmatic/ Targeted/ Segmentable/Addressable	Servers processing transmission through SSP/DSP buying process	Use phase & embodied			Import from digital				Programmatic formulas are to be imported from digital. However, values of defaults will be different. Addressable TV can rely on different protocol than Programmatic TV, however this was not covered in V1.
				Networks transmission through SSP/DSP buying process	Use phase							
					Embodied							
	Ad Creative Delivery	Transformation & Transfer	Linear broadcast (TNT/SAT)	Servers processing of ad delivery (broadcast)	Use phase	• Number of diffusions • Spot duration • Bitrate • Number of outputs	Low to medium	*Number of diffusions* ** Spot duration (s)* ** bitrate before transcoding (kB/s)* ** Number of media outputs[9]* */ Concurrent transcoding factor[10]* ** Redundancy factor* ** Infrastructure efficiency per data transferred including PUE (kWh/kB)* ** carbon intensity of electricity (kgCO2e/kWh)*				Broadcast networks are supposed to be mobilized each type a diffusion of the spot is made.
					Embodied		Low to medium	*Number of diffusions* ** Spot duration (s)* */ average lifetime of infrastructure equipment (s)* ** EF Manufacturing and EOL of infrastructure equipment (kgCO2e)*				
				Networks transmission of ad delivery (broadcast)	Use phase	• Number of diffusions • Spot duration	Low to medium	$*\sum\limits_{\text{Number of network type}}$	*Number of diffusions* ** Spot duration (s)* *(consumption breakdown between countries of servers / users (%)* ** network energy intensity according to network type[8] and country (kWh/s)* ** carbon intensity of electricity (kgCO2e/kWh))*			
					Embodied		Low to medium	$*\sum\limits_{\text{Number of network type}}$	*Number of diffusions* ** Spot duration (s)* *(consumption breakdown between types of network (%)* ** EF manufacturing & EOL amortization networks according to network type[8] and country (kgCO2e/kB))*			
			Linear multicast (IPTV)	Servers processing and networks transmission of ad (multicast)	Use phase & Embodied			Same as linear broadcast (see above).				The multicast mode is modelized similarly to broadcast for transmission (values used can however be different, e.g. efficiency of networks).
			Non-linear (& linear) unicast (CTV/OTT/ VOD...)	Servers processing of ad delivery (unicast)	Use phase	• Data transferred (kB) • Location	Medium to high	$*\sum\limits_{\text{Number of infrastructures}}$	*Views * total server output data per view[5] (kB)* ** Number of media outputs[9]* */ Concurrent transcoding factor[10]* *(Breakdown of content delivered by ad servers vs. edge nodes[6] (%)* ** datacenter or edge nodes energy efficiency including PUE (kWh/kB output)* ** carbon intensity of electricity(kgCO2e/kWh))[7]*		• Total server output data per impression / Total data transferred on network per impression: For static format: file size proxy + payload overhead of additional assets For video format: portion of file size loaded (incl. buffer) + payload overhead of additional assets • Breakdown of content delivered by ad servers vs. edge nodes: Cache hit ratio of CDN can be a good lead	Conventional network model for digital networks.
					Embodied	• Data transferred (kB)	Medium to high	$*\sum\limits_{\text{Number of infrastructures}}$	*Views * total server output data per view[5] (kB)* ** Number of media outputs[9]* */ Concurrent transcoding factor[10]* *(Breakdown of content delivered by ad servers vs. edge nodes[6] (%)* ** EF manufacturing and EOL of total relevant infrastructure (kgCO2e)* */ infrastructure output bandwidth (kB/s)* */ average lifetime of infrastructure equipment(s))[7]*			
				Networks transmission of ad delivery (unicast)	Use phase	• Data transferred (kB) • Location	Medium to high	$*\sum\limits_{\text{Number of network type}}$ $*\sum\limits_{\text{Number of infrastructures}}$	*Views * total data transferred on network per view[2] (kB)* *(consumption breakdown between types of network (%)* ** energy efficiency according to network type[8] and country (kWh/kB))* *(consumption breakdown between countries of servers / edges nodes[6] and users (%)* ** carbon intensity of electricity (kgCO2e/kWh))*			
					Embodied	• Data transferred (kB)	Medium to high	$*\sum\limits_{\text{Number of network type}}$	*Views * total data transferred on network per view[2] (kB)* *(consumption breakdown between types of network (%)* ** EF manufacturing & EOL amortization networks according to network type[8] and country (kgCO2e/kB))[7]*			

Continued on next page

CONSUMPTION	Device Display	User device load	Download / stream of creative to the user device. Includes embodied emissions of devices.	Use phase	• Data transferred (incl. file size) • Device type	Low	$*\sum_{Devices^{13}}$	*Impressions × Data transferred per impression[11] (kB) / Broadband speed breakdown by country and by network type (kB/s)* *(Device mix (%)* *× Device power consumption to maintain active connection[12] (W)))* *× time conversion ratio (h/s)* *× carbon intensity of electricity (kgCO2e/kWh)*	Load and render power of devices are expected not to be available, therefore the alternative is to account for full device power and lifecycle and not separate those two phases. Replace: *Device render power consumption* By : *Device total power consumption* Replace : *EF manufacturing & EOL amortization of devices, share of render* By : *EF manufacturing and EOL total amortization of devices* Device mix: Expected to be an average, for example yearly (unlikely to be a campaign based report).	Not using this formula yet (see opposite).	Time to load (s) is determined by the first two parameters. Short time is expected therefore materiality is expected to be low. However, it might become more material in time with on-device advertising is also identified as having a growing impact on loading, but not modeled in V1, and it also needs to be confirmed.
				Embodied		Low	$*\sum_{Devices^{13}}$	*Impressions × Data transferred per impression[11] (kB) / Broadband speed breakdown by country and by network type (kB/s)* *(Device mix (%)* *× EF manufacturing and EOL amortization of devices, share of connectivity[12] (kgCO2e/unit)* */ total active used time over lifetime by device type (s of active use over full lifetime))*		Not using this formula yet (see opposite).	
		User device render	Render and display of creative on the user device. Includes embodied emissions of devices.	Use phase	• Time displayed • Device type	High	$*\sum_{Devices^{13}}$	*Impressions × Time displayed on device per impression(s)* *(Device mix by type and country (%)* *× Time displayed on device (s)* *× Device render power consumption[10] (W)* *× time conversion ratio (h/s)* *× carbon intensity of electricity (kgCO2e/kWh))*		Use full device power in the formula.	
				Embodied		High	$*\sum_{Devices^{13}}$	*Impressions × Time displayed on device per impression(s)* *(Device mix by type and country (%)* *× Time displayed on device (s)* *× EF manufacturing & and EOL amortization of devices, share of render[10] (kgCO2e/unit)* */ total active used time over lifetime by device type (s of active use over full lifetime))*		Use full device EF in the formula. Total active used time over lifeti me by device type is the result of daily use x lifetime in years.	
ALL		Corporate emissions overhead	Allocated organizational emissions attributed to the specific campaign across ALL entities in the campaign value chain.	Corporate overhead	Campaign revenue	High	$\sum_{Number\ of\ assets}$	*Total relevant annual corporate emissions[1] (kgCO2e) *allocation factor for the campaign[2]*		/	Every organization in the value chain should be reporting their verified enterprise GHG emissions inventory annually to ensure reasonable data quality at the enterprise level. These enterprise emissions should then be allocated to specific ad campaigns based on either a kg CO2e/$ or kg CO2e/person hour emissions factor.

Footnotes for TV

Corporate emissions overhead:

[1]See corporate emissions section. Ideally, relevant emissions should be considered (scope 1, 2, 3 covering additional corporate processes) and not account for emissions directly accounted for in the campaign direct emissions (servers...)

[2]Allocation factor for the campaign which may be calculated as a % either of revenue of the campaign/total revenue of the entity or person hours for the campaign/total annual person hours of the entity.

Tech Manipulation:

[3]Servers impact (that can be split by lifecycle phase) based on server type, efficiency and location (simplified formula).

[4]Storage of creative is likely to happen not for one campaign only, therefore an allocation factor for the campaign is needed and may be calculated as a % either of revenue of the campaign/total revenue of the entity or campaign volume (e.g. impressions) / volume of all campaigns where the assets were used.

Ad Space Selection (Programmatic TV):

Imported from digital

Ad Creative Delivery:

[5]Ideally taking into account both:

- Real size of data transferred: For servers : Spot duration (s) x bitrate before transcoding (kB/s) ; for networks: Spot duration (s) x average bitrate of network (kB/s)

- Additional assets transmission

[6]Popular contents with the local host's user base are temporarily cached on edge nodes, therefore delivered from a local datacenter-like infrastructure (impact on carbon intensity of electricity)

[7]Sigma to account for different environmental performances of ad servers and edge nodes, as well as location for use phase and computing power for embodied emissions (different server models/configuration end in different emissions).

[8]Accounting for different performances of networks (e.g. fixed vs mobile, global vs local), as well as country. Edge nodes / CDN also allow to win on the network part (local delivery).

[9]For a single ad, there may be more than one version required for transcoding purposes

[10]Factor taking into account simultaneous encoding of assets

Consumption;

[11]Ideally taking into account both:

- Real size of creative file transferred: file size depending on user device/screen size, buffer settings, network quality...

- Additional assets transmission: scripts...

[12]Additional studies are needed to fully modelized difference of screen power (render) vs. active connection (load) so it is expected to be modelled globally.

[13]3 Devices list to be covered: any type of terminal that loads and displays video (TV, laptops, smartphones...), as well as extra set-top boxes / decoders equipment for modes that require them (especially linear broadcast / multicast modes).

Out-of-Home: Channel Emissions Workflows, Channel Emissions Framework, Channel Emissions Formula

Channel Emissions Workflow: OOH: Physical / V.1.0
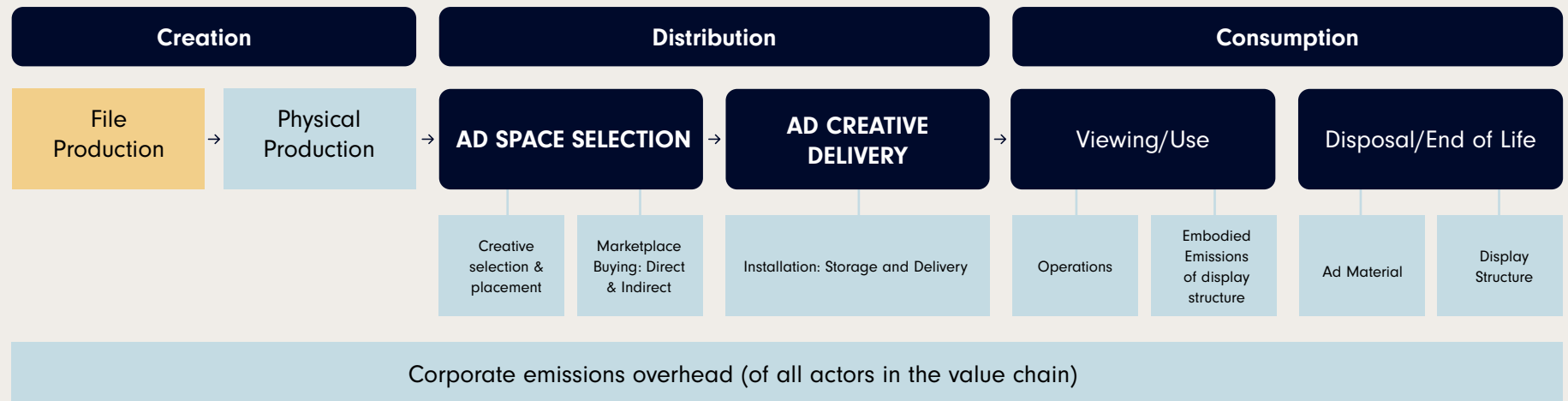
Creation	Distribution	Consumption

File Production	Physical Production	→	**AD SPACE SELECTION**	→	**AD CREATIVE DELIVERY**	→	Viewing/Use	Disposal/End of Life

| | | Creative selection & placement | Marketplace Buying: Direct & Indirect | Installation: Storage and Delivery | Operations | Embodied Emissions of display structure | Ad Material | Display Structure |

Corporate emissions overhead (of all actors in the value chain)

Excluded from the system boundaries of this framework.

Included in the system boundaries

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Channel Emissions Workflow: OOH / Digital / V.1.0
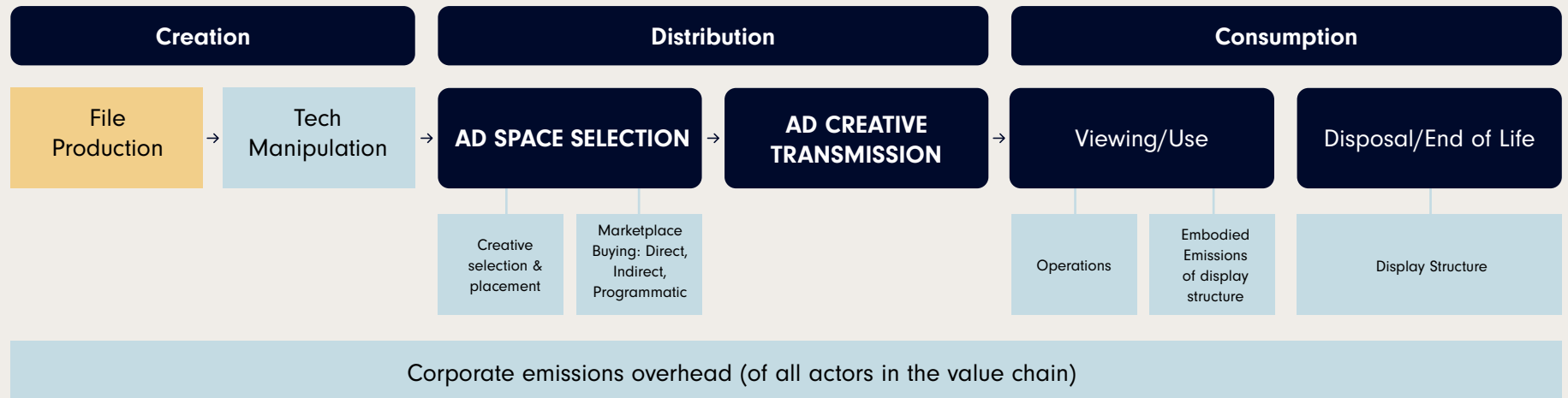
Creation	Distribution	Consumption

File Production	Tech Manipulation	AD SPACE SELECTION	AD CREATIVE TRANSMISSION	Viewing/Use	Disposal/End of Life

- Creative selection & placement
- Marketplace Buying: Direct, Indirect, Programmatic
- Operations
- Embodied Emissions of display structure
- Display Structure

Corporate emissions overhead (of all actors in the value chain)

Excluded from the system boundaries of this framework.

Included in the system boundaries

Channel Emissions Workflow: OOH / Transient / V.1.0

Creation	Distribution	Consumption

Physical

File Production	Physical Production	AD SPACE SELECTION	AD CREATIVE DELIVERY	Display: Dedicated Trasient	Disposal/End of Life

- Physical Production → Raw material extraction & manufacturing
- AD SPACE SELECTION → Creative selection & placement | Marketplace Buying: Direct, Indirect, Programmatic
- AD CREATIVE DELIVERY → Installation: Storage & Delivery
- Display: Dedicated Trasient → Dedicated Vehicle: Use Phase | Dedicated Vehicle: embodied emissions
- Disposal/End of Life → Ad Material | Dedicated Vehicle

Digital

File Production	File Tech Manipulation	AD SPACE SELECTION	AD CREATIVE TRANSMISSION	Display	Disposal/End of Life

- AD SPACE SELECTION → Creative selection & placement | Marketplace Buying: Direct, Indirect, Programmatic
- Display → Operations | Embodied Emissions of display structure
- Disposal/End of Life → Display Structure

Corporate emissions overhead (of all actors in the value chain)

- Excluded from the system boundaries of this framework.
- Included in the system boundaries

Channel Emissions Framework & Formula: OOH / V.1.0

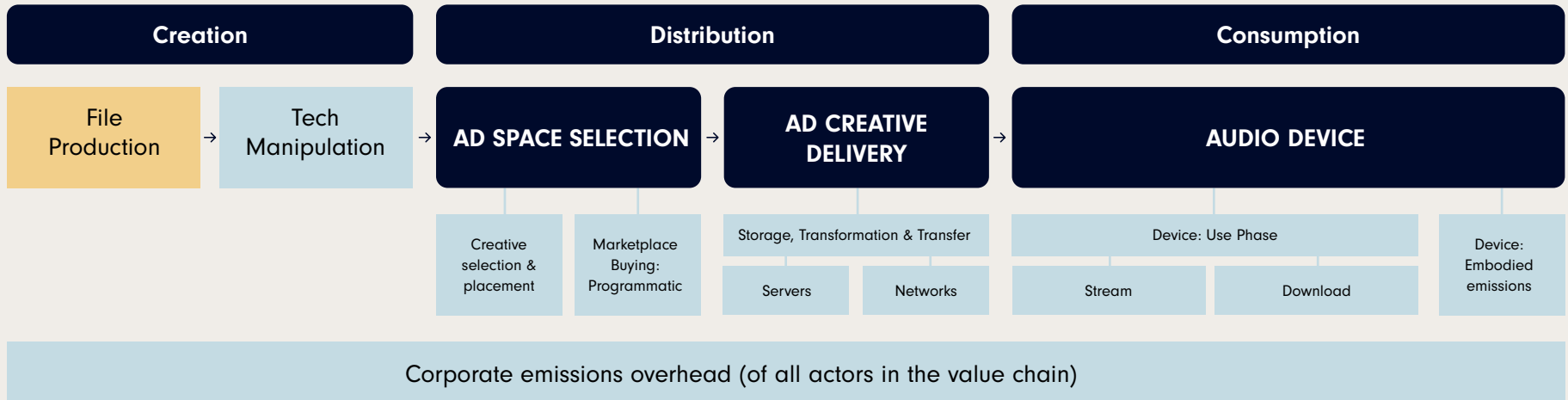| Phase	Step & sub-step		Physical processes involved	Formula type	Formulae V1	Expected materiality	Comments
CREATION	Creative Production		Development of creative	AdGreen methodology	Import kgCO2e from AdGreen calculation	Transmission of content to production facility not included as well below material threshold	
CREATION	Physical Production		Full LCA impact based on material supply chain, transformation, printing, creating finished product	LCA GHG emission factors	Σ (i = 1ton) (Xi * EFi) i is the format type; Xi is the number of formats produced; EFi is the weighted average emissions factor for format (kg CO2e/format) weighted average EF for format = %recycled material x EF of recycled format + %virgin material x EF of virgin material format		Creating a table of emission factors by format type based on well-documented LCAs is required. A format type may be one material (e.g., paper, plastic) or a combination of materials. Source D claims to be open source based on LCAs so these may be evaluated as soon as they are provided. All formats produced (not just ultimately displayed) will need to be summed in this step. Source D on print notes an average EF per format type to reflect possible material recycling (to be encouraged):
DISTRIBUTION	Demand: Selection & Targeting	Creative selection	Process to select creative format	none	none	Assume no material emissions from this step; small part of professional services	
DISTRIBUTION	Demand: Selection & Targeting	Placement volume	Number of sites used for campaign	none	No material emissions from this step; output of this step (Number of sites and format type, number of days live) used in transportation, and operational utilities emissions estimates	Assume no material emissions from this step; small part of professional services	
DISTRIBUTION	Demand: Selection & Targeting	Geographic / Audience selection	Location of sites used for campaign	none	No material emissions from this step. Output of this step (Geographic location of sites) used in transportation emissions estimates	Assume no material emissions from this step; small part of professional services	
DISTRIBUTION	Marketplace: Buying	Direct	Buying process from advertiser to media owner	GARM/ANZ direct formula	insert from TV standard	Assume no difference from other channel buying process	
DISTRIBUTION	Marketplace: Buying	Indirect	Buying process through agency and/or specialist	GARM/ANZ indirect formula	insert from TV standard	Assume no difference from other channel buying process	
DISTRIBUTION	Marketplace: Buying	Programmatic	Buying process through SSP/DSP	GARM/ANZ programmatic formula	insert from programmatic standard	Assume no difference from programmatic buying process besides being less resource intensive	
DISTRIBUTION	Installation: Storage & Delivery	Physical – storage	Transportation to storage from production Storage in warehouse	Operational emission factors	Transport: distance travelled km x EF for vehicle type kg CO2e/km x % of vehicle used for ad products Storage: (annual warehouse emissions kg CO2e/area of warehouse sq m) x area used for storage sq m x #days stored/365	Grouped transportation and storage to be consistent with framework	
DISTRIBUTION	Installation: Storage & Delivery	Physical – transportation, installation	Transportation from storage to display locations Installation	Operational emission factors	Transport: Σ (i = 1ton) (Di * EFVi) i is the vehicle type; Di dis the total distance(km) travelled to all display sites by the vehicle type; EFVi is the emissions factor for the vehicle type kg CO2e/km installation: Σ (i = 1ton) (Xi * EFIi) i is the format type; Xi is the number of format i; EFIi is the emissions factor for the installation of format i	No separate emission factors for installation have been mentioned by any of the sources so far	
DISTRIBUTION	Installation: Storage & Delivery	Transient – transportation, installation	Transportation of mobile platforms to installation facility Installation	Operational emission factors	Transport: Σ (i = 1ton) (Di * EFVi) i is the vehicle type; Di dis the total distance(km) travelled to installation sites by the vehicle type; EFVi is the emissions factor for the vehicle type kg CO2e/km installation: Σ (i = 1ton) (Xi * EFIi) i is the format type; Xi is the number of format i; EFIi is the emissions factor for the installation of format i, including the prorated operational emissions (annual emissions of installation facility * hours for installation per format type/total annual facility operational hours)	Transportation could be to a centralized installation facility or from a facility to field locations. no separate emission factors for installation have been mentioned by any of the sources so far; installation may also include removal of existing wrap or other display materials, cleaning of the vehicle exterior, and all other energy used at the facility.	
DISTRIBUTION	Installation: Storage & Delivery	Digital	Digital transmission to display device	none	none	Assume one time transmittal of digital file, which is stored on the device (no material emissions)	

The Fifth column

			Description	Emission factor type	Formula	Notes	Comments
CONSUMPTION	Display: Viewing	Transient (not dedicated to advertising)	Assume the advertising does not create any change to mobile platform deployment for other purposes	none	none	Assume the addition of advertising does not impact the energy used by the mobile platform (e.g., no change in routes, no change in energy efficiency); as the vehicle is not dedicated to advertising, no embedded emissions are estimated (assuming any dedicated structures, such as frames, have no material embedded emissions)	
		Dedicated Transient-- operations	Energy required to move dedicated ad vehicle	Operational emission factors	transport: Σ (i = 1ton) (Di * EFVi) i is the vehicle type; Di dis the total distance(km) travelled to installation sites by the vehicle type; EFVi is the emissions factor for the vehicle type kg CO2e/km		Dedicated vehicles could include trailers/other structures
		Dedicated Transient-- embedded	Embedded emissions from dedicated display vehicle	Embedded emissions factors	Σ (i = 1ton) EEVi * (T/LTi) i is the vehicle type; EEVi is the total embedded emissions for the vehicle type kg CO2e; T is hours ad displayed; LTi is hours of total time of depreciation for vehicle type i		Embedded emissions figures from documented LCAs for vehicles; financial depreciation time period used to estimate useful life and align with financial accounting practices
		Digital--operations	Energy consumed for digital display	Operational emission factors	kWh used during display time * emission factor for grid kg CO2e/kWh	The generic formula is likely incorporated into the various sources' formulae; these emissions are likely some of the most material	
		Digital--embedded	Embedded emissions from display structure	Embedded emissions factors	Σ (i = 1ton) EEDi * (T/LTi) i is the display type; EEDi is the total embedded emissions for the display type kg CO2e; T is hours ad displayed; LTi is hours of total time of depreciation for display type i		Embedded emissions figures from documented LCAs for DOOH display types; financial depreciation time period used to estimate useful life and align with financial accounting practices
		Physical--operations	Energy consumed for illumination, mechanical movement	Operational emission factors	kWh used during display time * emission factor for grid kg CO2e/kWh	The generic formula is likely incorporated into the various sources' formulae; these emissions are likely some of the most material	
		Physical--embedded	Embedded emissions from display structure	Embedded emissions factors	Σ (i = 1ton) EEDSi * (T/LTi) i is the display type; EEDSi is the total embedded emissions for the display structure type kg CO2e; T is hours ad displayed; LTi is hours of total time of depreciation for display structure type i		Embedded emissions figures from documented LCAs for display structure (e.g., free standing billboards, mounted billboards, other dedicated display structures) types; financial depreciation time period used to estimate useful life and align with financial accounting practices If the display structure has other functionality (e.g., bench, bus stop shelter), the embodied emissions are not included.
	Disposal & End of Life	Transient (not dedicated) ad material	Disposal/end of life of material removed from mobile platform	Standard disposal/EoL emissions factors	Σ (i = 1ton) (Mi * EFMi) i is the ad material type; Mi is the mass of the ad material kg; EFMi is the weighted average emissions factor for end-of-life action kg CO2e/km EFMi = % * EFM-recycled + % * ERM-landfill + % * EFM-incineration	assumes incremental material transportation is not material	For non-dedicated mobile platforms, disposal of the platforms is not included;
		Dedicated Transient mobile platform	Disposal/end of life for mobile platforms	Prorated disposal/EoL emissions factors	Σ (i = 1ton) DEVi * (T/LTi) i is the vehicle type; DEVi is the total end of life emissions for the vehicle type kg CO2e; T is hours ad displayed; LTi is hours of total time of depreciation for vehicle type i		Similar to embedded emissions approach; assumes DEVi includes all support activities (e.g., dismantling, transportation)
		Physical - ad material	Disposal/end of life of material removed from display structures	Standard disposal/EoL emissions factors	Σ (i = 1ton) (Mi * EFMi) i is the ad material type; Mi is the mass of the ad material kg; EFMi is the weighted average emissions factor for end-of-life action kg CO2e/km EFMi = % * EFM-recycled + % * EFM-landfill + % * EFM-incineration		These are standard approaches; assumes post use material transportation is part of installation transportation (no dedicated transportation activity)
		Physical - display structure	Disposal/end of life of display structures	Prorated disposal/EoL emissions factors	Σ (i = 1ton) DEDi * (T/LTi) i is the display type; DEDi is the total end of life emissions for the display type kg CO2e; T is hours ad displayed; LTi is hours of total time of depreciation for display type i		Similar to embedded emissions approach assumes DEDi includes all support activities (e.g., dismantling, transportation)
		Digital display structure	Disposal/end of life of display structures	Prorated disposal/EoL emissions factors	Σ (i = 1ton) DEDSi * (T/LTi) i is the display type; DEDSi is the total end of life emissions for the display structure type kg CO2e; T is hours ad displayed; LTi is hours of total time of depreciation for display structure type i		There are no emissions for end of life of ad content; end of life estimate similar to embedded emissions approach assumes DEDSi includes all support activities (e.g., dismantling, transportation)
ALL		Corporate overhead emissions allocation	Allocated organizational emissions attributed to the specific campaign across ALL entities in the campaign value chain		Σ (i = 1ton) CEi * AFi i is the value chain entity (ranging from publisher to adtech to agency, covering ALL entities involved with the campaign); CEi is the total annual corporate emissions for entity i in kg CO2e; AFi is the allocation factor for the campaign which may be calculated as a % either of revenue of the campaign/total revenue of the entity or person hours for the campaign/total annual person hours of the entity		Every organization in the value chain should be reporting their verified enterprise GHG emissions inventory annually to ensure reasonable data quality at the enterprise level. These enterprise emissions should then be allocated to specific ad campaigns based on either a kg CO2e/$ or kg CO2e/person hour emissions factor.

Radio / Audio: Channel Emissions Workflows, Channel Emissions Framework

Channel Emissions Workflow: Radio / On Demand / V.1.0

Creation	Distribution	Consumption

| File Production | → | Tech Manipulation | → | **AD SPACE SELECTION** | → | **AD CREATIVE DELIVERY** | → | **AUDIO DEVICE** |

AD SPACE SELECTION
- Creative selection & placement
- Marketplace Buying: Programmatic

AD CREATIVE DELIVERY
- Storage, Transformation & Transfer
  - Servers
  - Networks

AUDIO DEVICE
- Device: Use Phase
  - Stream
  - Download
- Device: Embodied emissions

Corporate emissions overhead (of all actors in the value chain)

Excluded from the system boundaries of this framework.

Included in the system boundaries

Channel Emissions Workflow: Radio / Linear / DAB V. 1.0
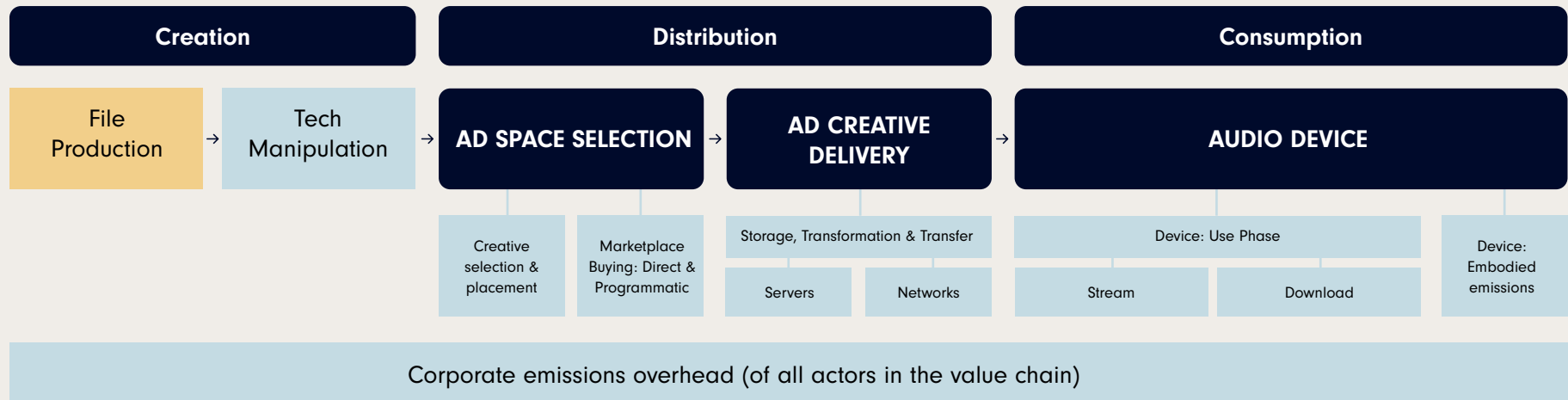
Creation	Distribution	Consumption

File Production	Tech Manipulation	AD SPACE SELECTION	AD CREATIVE DELIVERY	AUDIO DEVICE

AD SPACE SELECTION
- Creative selection & placement
- Marketplace Buying: Direct & Programmatic

AD CREATIVE DELIVERY
- Storage, Transformation & Transfer
  - Servers
  - Networks

AUDIO DEVICE
- Device: Use Phase
  - Stream
  - Download
- Device: Embodied emissions

Corporate emissions overhead (of all actors in the value chain)

Excluded from the system boundaries of this framework.

Included in the system boundaries

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Channel Emissions Workflow: Radio / Satellite / V.1.0
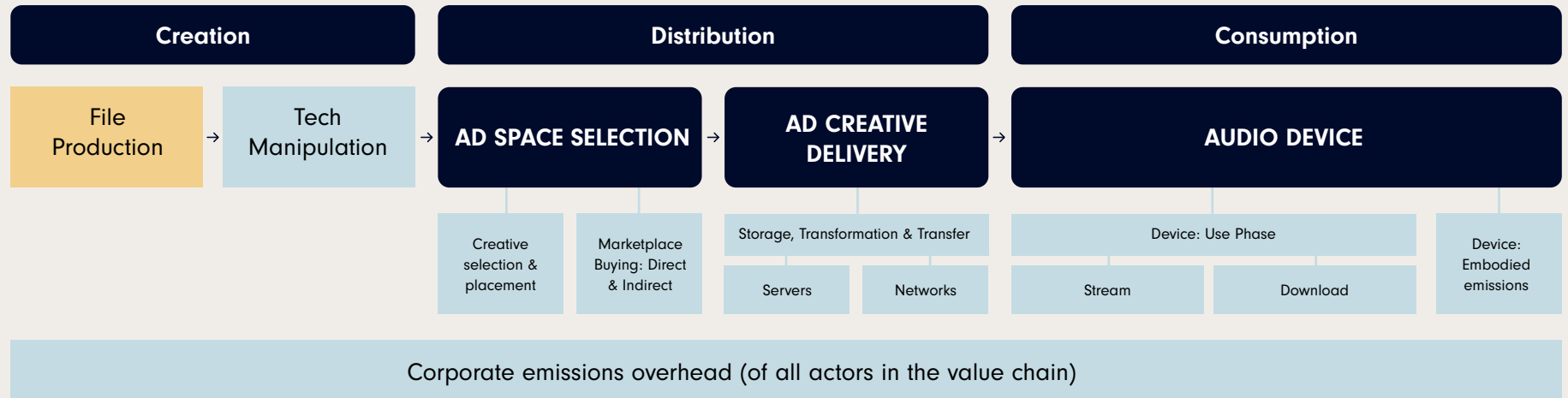
Creation	Distribution	Consumption

File Production	Tech Manipulation	AD SPACE SELECTION	AD CREATIVE DELIVERY	AUDIO DEVICE

AD SPACE SELECTION
- Creative selection & placement
- Marketplace Buying: Direct & Indirect

AD CREATIVE DELIVERY
- Storage, Transformation & Transfer
  - Servers
  - Networks

AUDIO DEVICE
- Device: Use Phase
  - Stream
  - Download
- Device: Embodied emissions

Corporate emissions overhead (of all actors in the value chain)

■ Excluded from the system boundaries of this framework.

■ Included in the system boundaries

Channel Emissions Framework: Radio / V.1.0

Phase	Step & sub-step			Data owners	Definition	Data Inputs for Calculation
Creation	**File production**	Production (Creative Development)	Post Production	Creative Agency, Production Team	Development of creative asset as a digital file	For physical production, include variety of inputs covering travel, accommodation, raw materials, studio space, waste, editing etc. For virtual, include components like Gen AI
		Storage (Creative Development)			Storage of the creative asset at any step in the creation process including at creative and production agencies	Energy consumption of asset storage by size of file (KB) at any storage point, incl Electricity consumption of owned servers / cloud storage and tagging. Needs to cover both file size and duration of storage. X kWh per GB per year OR Use average storage time
		Tech Manipulation (Multivariant Creative for Digital Radio)		Creative Agency, Production Team, AdTech	Creation of multiple volume of assets for the purpose of distribution.	Volume of new additional assets created and additional storage implications, incl Added weight of assets generated/modified using AI, multiplied by storage intensity.
Distribution	**Ad space Selection**	Creative Selection & Placement	Linear/DAB	Media agency / DAX	Planning of creative to go on specific inventory within a marketplace	Time required to develop campaign as a proportion of agency emissions
			Satellite	Media agency / DAX	Planning of creative to go on digital inventory within a marketplace	Size and duration of creative
			CUR/OTT/OD	Media agency / DAX	Planning of creative to go on digital inventory within a marketplace	Size and duration of creative
		Marketplace: Buying	Direct	Client / Media owner / DAX	Buying process from advertiser to media owner via DAX or similar	Time required to develop campaign as a proportion of agency enterprise emissions
			Indirect	Media agency	Buying process through agency and/or specialist	Average energy consumption of the advertiser's indirect buying process
			Programmatic/ Targeted / Addressable/ Segmented	Client OR Media agency OR DSP	Buying process through SSP/DSP	Number of pathways activated, size of requests
	Ad Creative Delivery	Storage, Transformation & Transfer	Linear/DAB	Media owner	Transmission process of campaign for linear Radio	Efficiency average energy of the network + Average share of connected audience via the network + transmission weight of the creative (KB). Weight of file (usually determined by bitrate * duration) and number of diffusions
			Satellite	Media owner	Transmission process of campaign for Satellite Radio including use & embodied emissions	Efficiency average energy of the network + Average share of connected audience via the network + transmission weight of the creative (KB). Duration of file and number of diffusions
			CUR/OTT/OD	Media owner	Transmission process of campaign for Listen on Demand	Efficiency average energy of the network + Average share of connected audience via the network + transmission weight of the creative KB + bidding tech stack energy consumption (a proportion of total). For unicast modes, weight of file (usually determined by bitrate * duration) and number of media files in adaptive bitrate ladder (+ efficiency, audience)
Consumption	Device Display: Use Phase	User device stream		Media Owner / LCA	Stream of creative to the user device. Includes embodied emissions of devices.	Audience Conversion may need to be considered
		Use device download		Media Owner / LCA	Download of creative on the user device. Includes embodied emissions of devices.	Audience Conversion must be considered (French market uses a global conversion factor for total reach where broadcasters are not able to specify)
	Device: Embodied Emissions, Disposal & End of Life			Media Owner / LCA	Creation, maintenance and disposal of digital devices	Embodied emissions from device creation, disposal (as a proportion of lifespan)
All	Corporate Emissions Overhead			Corporation	Allocated organizational emissions attributed to the specific campaign across ALL entities in the campaign value chain.	$\sum\limits_{\text{Number of entities}}$ (Total relevant annual corporate emissions[1] (kgCO2e) * allocation factor for the campaign[2])

Print: Channel Emissions Workflows, Channel Emissions Framework

Channel Emissions Workflow: Print / V.1.0
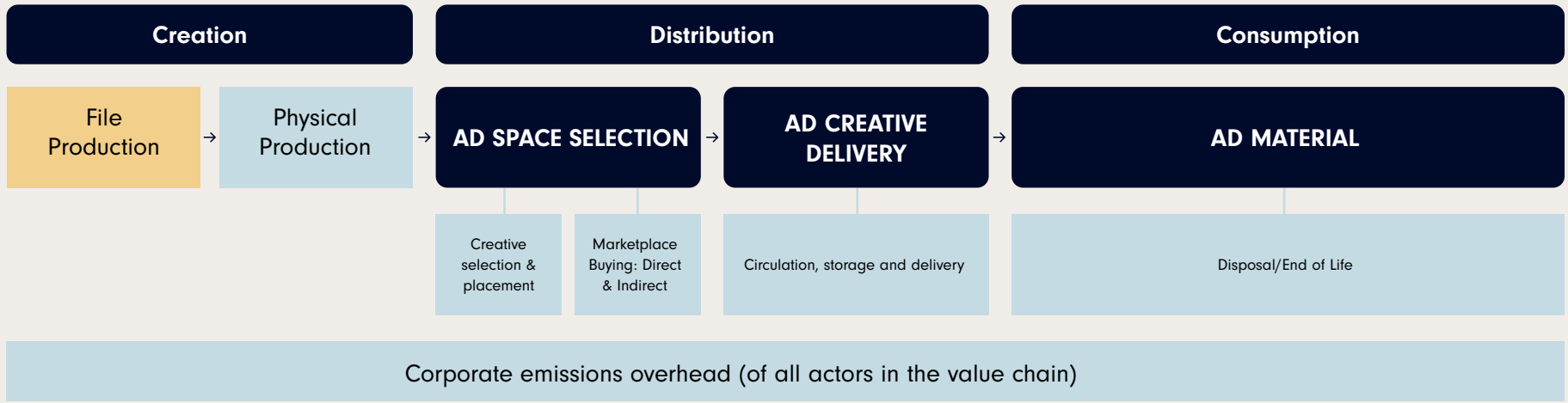
Creation	Distribution	Consumption

File Production	Physical Production	→	AD SPACE SELECTION	→	AD CREATIVE DELIVERY	→	AD MATERIAL

| | | Creative selection & placement | Marketplace Buying: Direct & Indirect | Circulation, storage and delivery | Disposal/End of Life |

Corporate emissions overhead (of all actors in the value chain)

Excluded from the system boundaries of this framework.

Included in the system boundaries

Channel Emissions Framework: Print / V.1.0

Phase	Step & sub-step			Data owners	Definition	Data Inputs for Calculation
Creation	File production			Ad agency, client	Development of creative asset as a digital file	Storage by size of file (KB)
Creation	Physical production			Specialist printing company OR Media owner	Production of static media for Paper, Printing, Consumables including sourcing of raw materials, production of paper, printing process including ink, glue, etc.	Type of paper, paper weight, printing process, ink, glue, special build materials used. For paper: size, grammage, print run, waste, spec+CO2e/t *90% of emissions in print is here
Distribution	Ad Space Selection	Creative Selection & Placement		Media agency	Planning of creative to go on specific inventory within a marketplace	Size of creative (KB), # circulated, # of days, proportion of enterprise emissions for selection and placement
Distribution	Ad Space Selection	Marketplace: Buying	Direct	Client AND Media owner	Buying process from advertiser to media owner	Average energy consumption of the advertiser's direct buying process
Distribution	Ad Space Selection	Marketplace: Buying	Indirect	Media agency	Buying process through agency and/or specialist	Average energy consumption of the advertiser's indirect buying process
Distribution	Ad Creative Delivery	Circulation: Storage & Delivery		Media owner / LCA	Transportation to point of sale/ point of use	Quantities, Size, Orientation, Extent, Distance Distributed, Time in Storage
Consumption	Disposal & End of Life Management			Media owner / LCA	Disposal / End of Life Management of Print Medium	Energy consumption in disposal of collateral at end of campaign including recyclability (calculated by weight), fuel used to transport material to facility, and emissions related to landfill
All	Corporate Emissions Overhead			Corporation	Allocated organizational emissions attributed to the specific campaign across ALL entities in the campaign value chain.	$\sum\limits_{\text{Number of entities}}$ (Total relevant annual corporate emissions[1] (kgCO2e) * allocation factor for the campaign[2])

Cinema: Channel Emissions Workflows, Channel Emissions Framework

Channel Emissions Workflow: Cinema / V.0.5
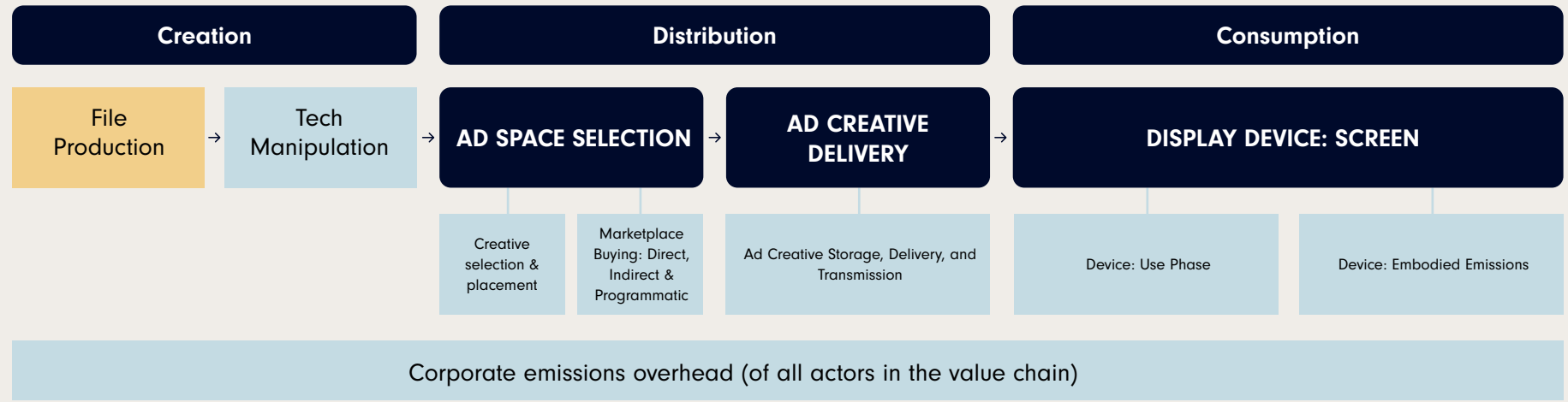
Creation	Distribution	Consumption

File Production	Tech Manipulation	→	**AD SPACE SELECTION**	→	**AD CREATIVE DELIVERY**	→	**DISPLAY DEVICE: SCREEN**

| | | Creative selection & placement | Marketplace Buying: Direct, Indirect & Programmatic | Ad Creative Storage, Delivery, and Transmission | Device: Use Phase | Device: Embodied Emissions |

Corporate emissions overhead (of all actors in the value chain)

☐ Excluded from the system boundaries of this framework.

☐ Included in the system boundaries

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Channel Emissions Framework: Cinema / V.0.5

Phase	Step & sub-step			Data owners	Definition	Data Inputs for Calculation
Creation	File production			Ad agency, client	Development of creative asset as a digital file	Storage by size of file (KB)
	Tech Manipulation			Creative Agency, Production Team, AdTech	Creation of multiple volume of assets for the purpose of distribution	Volume of new additional assets created and additional storage implications, incl Added weight of assets generated/ modified using AI, multiplied by storage intensity.
Distribution	Ad Space Selection	Creative Selection & Placement	Digital	Media agency	Planning of creative to go on digital inventory within a marketplace	Size of creative (KB), # of sites and format type, # of days live, Geographic location of sites, # of viewers
		Marketplace: Buying	Direct	Client AND Media owner	Buying process from advertiser to media owner	Average energy consumption of the advertiser's direct buying process
			Indirect	Media agency	Buying process through agency and/or specialist	Average energy consumption of the advertiser's indirect buying process
			Programmatic	Client OR Media agency OR DSP	Buying process through SSP/DSP	Average energy consumption of the advertiser's programmatic buying process
	Ad Creative Delivery	Storage, Delivery, Transmission		Media owner	Installation of campaign for digital consumption	Average energy consumption from number of layers of technology between point of buy and point of display
	Display Device Use Phase: Screen			Media owner	Campaign running via a digital format	GHG from panel energy grid consumption per hour, total display time, spot length, spot size and share of voice
Consumption	Display Device: Screen – Embodied Emissions			Media owner	Creation, maintenance and disposal of digital screens	Embodied energy in screen/bulbs/projector manufacture, maintenance & disposal. Average energy consumption in disposal of collateral at end of campaign including recyclability
All	Corporate Emissions Overhead			Corporation	Allocated organizational emissions attributed to the specific campaign across ALL entities in the campaign value chain.	$\sum$ Number of entities (Total relevant annual corporate@emissions[1] (kgCO2e)@*allocation factor for@the campaign[2])

Wave 2 and beyond:
Future Solutions

Future solutions to be determined

We recognize this as the first wave of work in the GMSF. We anticipate that frameworks will be updated based on in-market feedback. For instance, as media emissions data continue to become more specific and we determine which aspects of formulae are material, we will evolve key aspects of the frameworks and solutions. As such, Ad Net Zero will continue to publish updates on component parts and indicate their version.

Metric + Methodology: Evolving Solutions

As mentioned, this is the first wave of solutions and we expect more evolved and specific solutions. Future waves will include the following:

Digital	Channel Emissions Data Request Form Channel Emissions Data Source Guidance		**Print**	Channel Emissions Formula
TV/Video	Channel Emissions Data Request Form Channel Emissions Data Source Guidance		**Radio/Audio**	Channel Emissions Formula
Out-of-Home	Channel Emissions Data Request Form Channel Emissions Data Source Guidance		**Cinema**	Channel Emissions Framework Channel Emissions Formula

Audit & Verification: Establish trust in how emissions data is used in the media process, aligned with industry frameworks

What is the context and purpose of this solution?	This voluntary solution is meant to have third party auditors create an industry-supported audit specification that addresses how sustainability data is considered into the media discipline.
What is in consideration in the recommendation under development?	Specifically, audit and verification will ensure that industry-endorsed steps are taken to do the following: a. **Attribute** enterprise sustainability and emissions factors to media products. b. **Application** of media sustainability metrics to media planning and buying tools. c. **Measurement** of media sustainability metrics towards media performance. d. **Monitoring** of media sustainability metrics towards enterprise sustainability reporting.
Who is helping to advance the recommendation?	The Working Group is consulting external audit groups AAM, MRC, CESP and ABC to create a series of appropriate prioritized scopes that focus on critical media sustainability steps the industry needs validated by external audit.
What is coming next?	A proposal of prioritize audit scopes to develop.

Appendix

Frequently Asked Questions

Who are Ad Net Zero?

Ad Net Zero is a global climate action programme designed to help the advertising industry tackle the climate emergency. Its five-point action plan supports the industry in decarbonizing ad operations and supporting every industry to accurately promote sustainable products, services, and behaviours.

In March 2023, Ad Net Zero deepened its research on its Action 3, setting up a long-term, cross-industry workstream dedicated to media planning and buying.

What is Global Media Sustainability Framework and why is it important?

The aim is to provide standardization for the proliferation of GHG measurement tools and methodology which currently exists in the marketplace.

By creating a set of recommendations based on best practices and validated independent climate science input, we can improve the consistency, accuracy, and rigour for advertisers to better measure their emissions from media campaigns, regardless of which agency or partner they operate with, in any part of the world. The suite of recommendations also encompasses data request and will expand to include guidance on audits.

How can industry stakeholders consider using the Global Media Sustainability Framework?

As a voluntary industry framework, the Global Media Sustainability Framework is available without any restrictions. Any stakeholder within the advertising industry can access the resources and consider the relevance to their operations.

Below are some example use cases for Global Media Sustainability Framework to consider:

- Advertisers may request partners who measure GHG emissions from their media activities to use the Global Media Sustainability Framework Channel Emissions Formulae, ensuring that regardless of which partners they work with in each market, there will be consistency of measurement.

- Agencies may consider using the Global Media Sustainability Framework Channel Emissions Formulae within their own tools and make GHG emissions a consideration for all media plans, alongside other established media metrics.

- Media owners may supply the requested data to advertisers, agencies and other solutions providers in as much granularity as possible, continually improving the quality of this data over time, adding increased value and transparency to their offerings.

- Tool providers can highlight how their tool maps to the Global Media Sustainability Framework Channel Frameworks, enabling them to showcase enhancements or customization they may offer relative to competitors.

How is this different from other media sustainability frameworks and solutions?

The Global Media Sustainability Framework is based on voluntary work from Working Groups, and voluntary submissions to Ad Net Zero. This is similar to the process Union des Marques ran in France via OneFrame, the French industry standard, for different channels. By inviting these organizations into a voluntary, collaborative process with the wider industry, we have sought to create a single universal framework that can be used across all main channels and markets, with scope to improve over time. This will add much needed consistency across territories and channels and give full transparency to the measurement methodology.

What benefits can stakeholders expect from the Global Media Sustainability Framework?

Advertisers: Advertisers who may work with multiple media agencies, that may each have their own GHG measurement tools, will now have a voluntary framework that can create transparency in how approaches are different or can use the same framework for GHG media calculations. In addition, by measuring the GHG emissions within their media supply chain, advertisers may voluntarily decide to identify most GHG intensive activities, and may individually decide to take action to reduce these in line with their reduction targets.

Media Agencies: Agencies will have the opportunity to use the Global Media Sustainability Framework to adopt or map their methodologies to the voluntary framework and can use the data request form to more easily get access to first party media seller and supply chain emissions data.

Media Sellers: Media sellers and service providers will have clarity on what data they should provide to GHG calculator tool owners, such as agencies or other measurement providers. This should cut down on the number of requests, and the amount of time it takes to respond to requests for this information. It also provides clarity over how exactly they will be measured, and how competitors, and other channels will also be measured when it comes to GHG output. Media Owners can then work to improve the data level of granularity they provide, and ways to reduce the GHG emissions they produce.

Media Sustainability Solutions Providers: Similar to agencies, solutions providers will have the opportunity to use the Global Media Sustainability Framework to adopt or map their methodologies to the voluntary framework and can use the data request form to more easily get access to first party media seller and supply chain emissions data.

Who can help me implement this?

If you're an advertiser, you may consider speaking to your media agency and any measurement partners about adopting the Global Media Sustainability Framework to ensure transparency and consistency of methodology. For agencies, Ad Net Zero will provide the detailed formulas that you can use within your existing measurement tools, or alternatively it can be used by agencies without an existing product to create a new tool. For Media Owners Ad Net Zero will publish the data that will be requested, as well as the preferred granularity, with a pathway to improving the data. ANZ will make all documentation publicly available to help implementation.

How often will the Global Media Sustainability Framework be updated?

We are committed to onboarding feedback from the industry and also continuing to update the work. Our intent is to continue to update the work on an annual cycle at minimum. That said, we will update the framework as critical updates are available to component parts of the framework.

What are the biggest and easiest things I can do to reduce my emissions from media planning and buying?

If you are considering tactical emissions reductions alongside or instead of systemic transformation, you may want to consider the principles produced in the Ad Net Zero Action Guide launched in 2023, and that was based on best practice tactics being used right now by advertisers and agencies.

Glossary of Terms

Term	Definition/Explanation
Key Sustainability Terms	
Sustainability	In 1987, the UN defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." The 17 UN Sustainable Development Goals in effect since 2016 provide detailed descriptions and metrics for each aspect of sustainability. Climate Action, SDG 13, is one of the most relevant to the ad sector (sometimes "sustainability" and "climate" are used interchangeably in the ad sector), and the focus of this Framework. Responsible Consumption and Production, SDG 12, is also very relevant to the ad sector.
Scope 1	Covers all direct GHG emissions from sources that are owned or controlled by the company.
Scope 2	Covers indirect GHG emissions from consumption of energy (e.g., electricity, heat, cooling, steam) generated outside of the organizational boundary of the company.
Scope 3	GHG emissions from the production and extraction of purchased materials, fuels, and goods, as well as all other purchased services (e.g., IT services), transport-related activities (e.g. business travel, commuting) as well as outsourced activities, such as waste disposal – and most media emissions.
Climate change	Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil, and gas. Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures.
Greenhouse Gases (GHG) and CO2e	There are 6 primary greenhouse gases (as defined by the Kyoto Protocol) – all of them critically influenced by human behaviour (including the influence of synthetically produced gases like SF6 and HFCs). Since these gases have different impacts, we convert them to a common unit: Carbon Dioxide equivalent or CO2e. The shorthand is "carbon" which is why we talk about decarbonization.

Science Based Targets initiative (SBTi)	A corporate climate action NGO that develops standards, tools, and guidance which enable companies to set greenhouse gas emissions reductions targets in line with what is needed to keep global heating below catastrophic levels and reach net-zero by 2050 at latest, and have those targets validated. SBTi is spinning out a separate organization to continue to validate company targets.
International Organization for Standardization (ISO)	An independent, non-governmental international organization that brings global experts together to create internationally-agreed standards in various industries. The ISO 14000 family concerns environmental management. ISO 14064 is the standard that specifies how a company can create its GHG inventory and how that inventory can be verified by an accredited third party. ISO 14067 is the GHG Lifecycle Assessment standard which is most relevant to this Framework.
GHG Protocol	Greenhouse Gas Protocol provides the world's most widely used greenhouse gas accounting standards for companies. GHG Protocol standards and guidance enable companies to measure, manage and report greenhouse gas emissions from their operations and value chains. The GHG Protocol Product Life Cycle Accounting and Reporting Standard is the foundation of ISO 14067 and highly relevant to this Framework.
Intergovernmental Panel on Climate Change (IPCC)	The United Nations' body for assessing the science related to climate change, whose primary responsibility is the preparation of reports assessing the state of knowledge of climate change. These include assessment reports, special reports and methodology reports.
Legislation/Context	
Corporate Sustainability Reporting Directive (CSRD)	A directive by the European Union which strengthens the rules concerning the social and environmental information that companies have to report. A broader set of large companies, as well as listed SMEs, will now be required to report on sustainability. Entered into force 5 January 2023.
US Security and Exchange Commission (SEC)	An agency of the US government, in March 2024 the SEC adopted rules which will require companies to make certain climate-related disclosures in their annual reports.

Media/Advertising Terms	
Programmatic Advertising	Programmatic advertising uses software, data, and technology to add automation to the media selling and buying process.
Supply Side Platform (SSP)	An SSP is an advertising technology platform that allows publishers to sell their inventory through one single point of contact to the demand side.
Demand Side Platform (DSP)	A DSP is an advertising technology platform that allows media buyers to purchase advertising inventory from multiple SSPs and ad- exchanges via one centralized management platform.
Adtech (Advertising Technology)	The software and tools that agencies, brands, publishers, and platforms use to target, deliver, and measure their digital advertising campaigns.
Made for Advertising (MFA)	MFA websites are designed for the purpose of arbitrage and to maximize profits for their owners. MFA websites typically use click-bait and/or low-price point advertising to drive users to low quality content featuring excessive ad placements, auto-play video, and pop-up advertising.
Understanding the Framework	
Workflow	Graphical detail of the steps an ad message takes throughout the 3 Phases, including buying, transmission and consumption/display.
Channel Emissions Framework	Table detail of the functional units with a clear definition of the emissions, detailing source of emissions data.
Channel Emissions Formulae	Mathematical representation of how all of the relevant emissions-related activities following the frameworks are used to calculate the CO2e emissions for each process identified in the workflow.

System Boundaries	Specifies what is included or excluded of the calculations, following LCA principles as structured in the GHG Protocol Product Life Cycle Accounting and Reporting Standard.
Functional Operation	Key concept that defines the quantified performance of a studied product/service as a reference unit in a study. The output of the calculation represents the environmental impact of the functional unit. E.g. kg CO2e per 1000 impressions.
Emissions factor	Factors based on data and best practices that convert activity and other relevant data into CO2e emissions (e.g. kg CO2e/kWh; kg CO2e/km travelled). Using a common set of emissions factors is a critical part of any carbon accounting framework. There are many emissions factors for common infrastructure services such as electricity, fuels as well as IT services such as data transmission, and some emissions factors are being developed to account for the unique activities that occur in the ad sector.
Data levels	The GMSF classifies 4 levels of data with varying granularity, to note when there is a lack of activity-based product level data. The four data levels are: Level 1 Enterprise, Level 2 Market, Level 3 Business Unit, Level 4 Media Product. This classification along with understanding how much of the data is primary (coming from specific activities) vs estimated (via "hacks" or other rules of thumb) helps users of the overall emissions data understand the level of uncertainty of the data.
Activity-based product level data	Data that directly represents the variables in the formulae (vs using estimates, approximations, proxies, or other types of "hacks").
Data hack	Secondary method that can be used to calculate acceptable estimates in the absence of data or reasonable data quality.
Material/materiality	Any process or decision that is assessed to likely impact the total emissions calculation (in this case, the emissions across the ad campaign) by over 5%. This is considered "material" and must be included in the calculation. Materiality is an important concept to guide where it is important to focus the data gathering and calculation efforts and transparently note when material emissions were not included.

Embodied Emissions	The greenhouse gas emissions generated during the manufacturing, transportation, installation, maintenance, and disposal of goods, sometimes also referred to as embedded emissions. In the context of the GMSF, embedded emissions have been included and amortized over the life of the device or system involved in media placement or consumption (generally expressed as average life, usage time, end of life). The lifetime usually follows financial accounting principles for depreciation even when the actual lifetimes are longer to be consistent with financial accounting in general.
Tech manipulation	Creation of multiple asset formats or other modification of the creative product for the purpose of distribution.
Framework Steps	
Ad space selection	The process of matching an advertisement opportunity with an appropriate ad placement and selecting the creative content to be displayed to the target audience.
Real-time bidding	Emissions originating from a real-time bidding (RTB) process. Real-time bidding (RTB) refers to a way of transacting media that allows an individual ad impression to be put up for bid in real-time. This is accomplished through a programmatic on-the-spot auction, similar to how financial markets operate. RTB lets buyers use their own data and targeting options to bid for each ad impression. Advertisers can take factors such as site, placement, price and user data into account when bidding on each impression. The winning bidder gets its ad to be served, which is often customized on the fly to better tailor the message to the audience. This includes direct power consumption for the processing and transmission of requests, as well as embodied emissions associated with the infrastructure manufacturing, and end-of-life.
Direct Sale	Emissions originating from a direct buying process between ad buyer and media seller. This includes direct power consumption for the processing and transmission, as well as embodied emissions associated with the infrastructure manufacturing and end-of-life. Accounted for as programmatic unless a segment of inventory is set aside exclusively for direct sales.

Targeting	Emissions originating from any process of data collection for user or context qualification, data analysis and processing to use demographic, interest, behavioral, contextual, or keyword data to deliver ads to a specific audience or within relevant contexts. This process can be done through first-party or third-party data. This includes direct power consumption for the processing, as well as embodied emissions associated with the infrastructure manufacturing, and end-of-life.
Ad Creative Delivery	Process of storing a creative on the ad server and then sending it to the user device.
Ad Creative Storage	Emissions originating from the storage of the Ad Creative assets in Ad Servers and/or on CDN servers. The Ad Creative assets include all stored assets: videos, images, javascripts, 3D models, fonts, etc. as well as different file versions generated to adapt delivery of content to context. This includes direct energy consumption by the storage infrastructure, as well as the hardware's embodied emissions (manufacturing and end-of-life emissions).
Ad Creative Transmission	Emissions originating from the transmission of the Ad Creative assets from data centre, over network, but not including end-user device. The Ad Creative assets include all loaded assets required to generate the ad experience: videos, images, javascripts, 3D models, fonts, etc. This includes direct energy consumption by the data centres and the network infrastructure, as well as the hardware's embodied emissions (manufacturing and end-of-life emissions). When transmitting assets from a CDN edge node the calculation can use the user location to determine the carbon intensity of the electricity to apply. When transmitting assets from an Ad Server the calculation can consider both the data centre and the user location to determine the carbon intensity of the electricity to apply.
User device load	Emissions originating from the user device receiving data for an ad creative, including device's energy consumption for data transfer and device's embodied emissions (manufacturing and end of life emissions).
User device render	Emissions originating from the user device rendering an ad creative, including device's energy consumption for rendering and displaying the ad creative, and device's embodied emissions (manufacturing and end of life emissions).

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Steer Team

union des marques · DIAGEO · ANA · A's · ADVERTISING ASSOCIATION · Responsible Marketing Agency · reckitt · MARS · Unilever · MasterCard · sanofi · P&G · L'ORÉAL · ISBA · AD NET ZERO ALL FOR NONE

Climate Science Expert Group

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Technical Practices Review Team Participants

Industry Consult Participants

Ad Net Zero Compliance Statement

Ad Net Zero is an international, cross-industry coalition of businesses aimed at decarbonising advertising supply chains and encouraging growth of advertising that drives more sustainable choices and behaviours.

It represents the interests of the advertising industry. It acts as a forum for legitimate contacts between supporters of the advertising industry. It is the policy of ANZ that it will not be used by any company, industry grouping or individuals to further any anti-competitive or collusive conduct, or to engage in other activities that could violate any antitrust or competition law, regulation, rules or directives of any country, or otherwise impair full and fair competition.

Supporters acknowledge that being a supporter of ANZ is subject to the competition law rules and they agree to comply fully with those laws. Supporters agree that they will not use ANZ, directly or indirectly, (a) to reach or attempt to reach agreements or understandings with one or more of their competitors; (b) to obtain or attempt to obtain, or exchange or attempt to exchange, confidential or proprietary information regarding any other company other than in the context of a bona fide business; (c) to further any anti-competitive or collusive conduct; or (d) to engage in other activities that could violate any antitrust or competition law, regulation, rule or directives of any country or otherwise impair full and fair competition.

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