

# The Global Media Sustainability Framework:

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



# Contents

<b>1. Executive Summary</b>	<b>4</b>
Why ‘uncommon collaboration’ is needed for media sustainability	4
What is this and who is it for?	4
Why was it created and what are the challenges being addressed?	5
Oversight: How governance incorporates and leverages expertise	6
Key messages: What do senior leaders need to understand?	7
What opportunities can the GMSF encourage?	8
What are some watch-outs to acknowledge?	9
<b>2. A shared vision that helped shape this work</b>	<b>11</b>
<b>3. Getting started – some insights and best practices from trailblazers</b>	<b>12</b>
<b>4. Introducing The Global Media Sustainability Framework: Helping address industry needs with a holistic array of voluntary and pro-competitive tools</b>	<b>16</b>
What are the current component parts + benefits?	16
How do the solutions work together?	17
What channel-specific frameworks are ready and what are the future plans?	19
<b>6. Metrics + Methodology: A voluntary consistent framework to measure GHG across 6 media types thereby improving accuracy and rigor</b>	<b>20</b>
Strategic Principles: Calculation and Data	22
Technical Principles: Calculation and Data	25
Digital: Channel Emissions Workflows, Channel Emissions Framework, Channel Emissions Formula	30
TV / Video: Channel Emissions Workflows, Channel Emissions Framework & Channel Emissions Formula	36
Out-of-Home: Channel Emissions Workflows, Channel Emissions Framework, Channel Emissions Formula	41
Radio / Audio: Channel Emissions Workflows, Channel Emissions Framework	47
Print: Channel Emissions Workflows, Channel Emissions Framework	51

The Global Media Sustainability Framework	
Cinema: Channel Emissions Workflows, Channel Emissions Framework	53
Data Request: Efficient mechanism to collect first party emissions data from media sellers and value chain partners	55
Media Sustainability Solutions Transparency: Consistent framework to disclose services, data sources, and scientific oversight of media sustainability service providers	56
Monitoring: Voluntary framework to measure the progress of solutions across industry stakeholders	57
<b>7. Wave 2 &amp; Beyond: Future Solutions</b>	<b>58</b>
Metric + Methodology: Evolving Solutions	58
Audit & Verification: Establish trust in how emissions data is used in the media process, aligned with industry frameworks	58
<b>8. Appendix</b>	<b>59</b>
Frequently Asked Questions	59
Glossary of Terms	61

# 1. Executive Summary

## Why ‘uncommon collaboration’ is needed for media sustainability

Ad Net Zero is the international alliance of trade associations and businesses from across the advertising supply chain guided by a 5-Point Action Plan, which aims to accelerate GHG reduction efforts across ad operations, and encourage the promotion of sustainable products, services and behaviors.

Action 3 of Ad Net Zero’s 5-Point Action plan asks 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 3-4% 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 WFA and 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 a potential area of focus for measurement and for consideration in reductions.

## What is this and who is it for?

The Global Media Sustainability Framework 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 posed to the industry. The GMSF is aimed at providing media stakeholders with voluntary and pro-competitive tools to allow for the measurement of emissions more accurately across channels, geographies, and providers. The GMSF 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. The GMSF 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.

## Why was it created and what are the challenges being addressed?

Last year, the WFA's Global Alliance for Responsible Media (GARM) and Ad Net Zero (ANZ) published a guide that proposed 10 steps that media stakeholders could voluntarily take to reduce greenhouse gas emissions for several media tactics, ranging from digital to print to out of home to television. We were humbled by the voluntary sharing of the case studies for consideration.

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, GARM and Ad Net Zero determined this work could help alleviate some challenges and provide for efficiencies to embrace the opportunities identified in 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.

## The Global Media Sustainability Framework

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 approach media GHG emissions to support climate action**, and that the voluntary framework would need to span across three main dimensions:

<b>Functions</b>	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.
<b>Channels</b>	A voluntary industry framework for media should be pro-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.
<b>Geographies</b>	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.

So, we embarked on a process to create the GARM 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 to voluntarily participate in research, a series of six working groups, and feedback on recommended approaches. These organizations represent views from 42 markets.

## 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:

<b>Steer Team</b>	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 pro-competitive manner
<b>Climate Science Expert Group</b>	Responsible for ensuring that recommendations are science-based and consistent with carbon accounting practices across other sectors and are developed with scientific grounding and oversight

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

## Key messages: What do senior leaders need to understand?

### **A point on the journey, not a finish line**

The GARM ANZ 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 science evolves

### **Business outcomes, 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 pro-competitive and sustainable media industry.

The goal of media remains consumer reach in order to influence a purchase decision

The GARM 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

### **Voluntary development, using best practices, and freedom in adoption**

The voluntary GMSF is a pan-industry collaboration. It has been an amalgam of best practices voluntarily shared and workshopped to create a voluntary and pro-competitive industry-informed standard

This voluntary framework and guidance respects company freedom – stakeholders will at times have the liberty to endorse and adapt solutions relevant to their services

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.

The team behind the work would suggest some opportunities from the framework for consideration:

## What opportunities can the GMSF encourage?

### **A push towards activity-based product level data in line with existing best practices**

The goal for data is to employ 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. Lowering the level of uncertainty by using more primary, activity-based data is critical to improving the accuracy emissions measurement and reporting. 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 collaboration 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**

Proposing a common voluntary framework to identify energy-consuming steps in the delivery of an advertising unit may help towards creating a rigorous, comprehensive and transferrable voluntary framework based on functional units. 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. These CEFs create a reference point and recommend what should be included for calculation and are a leaping off point for formula development and data collection.

### **A pathway to audited data and solutions**

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.



However with each voluntary framework there are some cautions and watch-outs the team involved in its creation would like to share:

## What are some watch-outs to acknowledge?

### **Transformation comes in steps and stage gates should be cleared**

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 we are all on together, is Benchmarking + Understanding. Data are only gathered at this stage, and shouldn't be leaping towards Reduction or Optimization, unless there are clear areas of waste that parties can identify, such as high-emitting behaviors in MFA media placements.

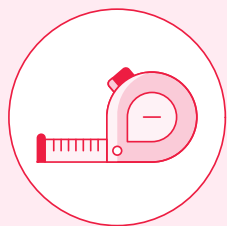
### **Media-related emissions data should be used to assess company-specific progress over time and flawed comparisons should be avoided**

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.

### **Prioritizing the elimination of waste**

There are certain functional units in the CEFs that may be more structural to a channel, where emissions reduction is dependent on the efforts of others – for instance consider the energy source underlying an electricity grid, which a media seller may have limited control over. 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 should consider choice and influence on each of the functional units and how measurement and reductions may be considered.

## 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 [GARM Ad Net Zero Quick Action Guide Steps](#)
- Review waste eliminating steps (non-productive, low-cost media)
- Consider encouraging key partners to consider 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.

The voluntary GMSF has the objective of fostering **enhanced transparency, consistency and accuracy**, with the aim of creating pro-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.

## 2. A shared vision that helped shape this work

Two previous cross-industry initiatives – GARM and ANZ – have helped to gather input and best practices to build a set of voluntary standards and solutions and pro-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.

### 1 Media outcomes, more sustainably

This work was crafted by media experts with input from client 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. We want to provide the tools for media leads to achieve their business objectives with sustainability in mind.

### 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 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, we should avoid bias against organizations unable to produce emissions data based on size. Small organizations, unable to produce emissions data based on size should not be penalized, and instances such as these alternatives like norms may be applied.

### 5 Voluntary industry standards and tools will create a baseline that is procompetitive

Market developments to date relative to media sustainability are notable. 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, formula, and data can help create a more transparent and even playing field to further support development that enhances our goals of transparency, rigor, and accuracy.

### 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 GARM 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 GARM 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.

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.

### 3. 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 for these trailblazers to share with leaders just starting out on their journey.

**These insights are pointers to consider:**

**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). Given that media emissions may be a smaller part of the overall footprint of an organization, it's important to consider how media emissions measurement and reductions 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. Successful media leaders have media sustainability fit within a larger strategy and have executive leadership backing.

**Understand where marketing and media fit in**

Our trailblazers have also been part of larger efforts to understand where the marketing function fits in within the larger enterprise. They have also 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**

The third thing we learned from the trailblazers is that 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've spoken with view their media sustainability roadmap as an open and transparent organizing framework for partners, not as a confidential black box evaluative criterion.

**Use data to benchmark your position**

The fourth thing we learned is that media sustainability experts start off the process by developing an initial benchmark to discover what they can measure at current and what the 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**

The fifth thing media sustainability experts considered was whether industry wisdom could allow for some easy, quick wins on the media sustainability journey. Many of them have pursued tactical emissions reductions. Consider media plan tactical choices, some of which are in the [GARM ANZ Media Sustainability Quick 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**

Another key best practice observed is that media sustainability trailblazers are sharing long-term objectives with 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**

Continued with sharing ambitions, is for media leaders to challenge others to consider their roles – this can be internal or external. 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**

Finally, the last best practice to consider from the leaders we've identified is managing the media sustainability journey as part of the overall media process. 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 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 specialty against departmental business objectives.

## The Global Media Sustainability Framework

We'd like to recognize all of the industry leaders who have graciously contributed to this work. Without their willingness to voluntarily join GARM and ANZ meetings – ranging from the Steer Team, the Climate Science Expert Group, the several Working Groups, the associated Task Forces, and being part of an industry-wide consultation process, the development of a comprehensive suite of voluntary tools and proposals would not be possible.

**We would like to recognize each of the following organizations:**

### Steer Team



DIAGEO



ADVERTISING ASSOCIATION



MARS



sanofi



L'OREAL



AD NET ZERO  
ALL FOR NONE

### Climate Science Expert Group



### Working Group Participants



HAVAS



NBCUniversal



SEEN THIS



NET ZERO MEDIA



CARBON QUOTA

TALON\_



IPG



amazon



dentsu

OmnicomGroup

Technical Practices Review Team Participants



Industry Consult Participants



## 4. Introducing The Global Media Sustainability Framework: Helping address industry needs with a holistic array of voluntary and pro-competitive tools

The GARM and 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:

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

### What are the current component parts + benefits?

Challenge Observed	Working Group	Benefits of Recommendation	Inclusion for Wave 1
There is a wide range of variability in how media emissions are measured across various stakeholders	<b>Metric + Methodology</b>	Consistent framework to measure GHG across 6 media types thereby improving accuracy and rigor	<b>Channel Emissions Frameworks:</b> TV/Video, Digital, Audio/Radio, Print, Out-of-Home, Cinema <b>Media Emissions Formula:</b> TV/Video, Digital, Out-of-Home
There is fragmentation of requests, varied understanding, that challenge what and how media emissions data are collected and shared	<b>Data Request + Access</b>	Efficient mechanism to collect first party emissions data from media sellers and value chain partners	<b>Media Emissions Data Request Form:</b> Enterprise level
There is a lack of understanding of marketplace solutions and where they fit into the media process	<b>Sustainability Solutions Transparency</b>	Consistent framework to disclose services, data sources, and scientific oversight of media sustainability service providers	<b>Media Sustainability Solutions Transparency Form</b>
There should be a consistent means of understanding how voluntary industry frameworks are adopted and improve practices	<b>Monitoring</b>	Voluntary tools to map the progress of solutions across industry stakeholders	<b>Media Sustainability Framework Adoption Grid</b>



## The Global Media Sustainability Framework

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 GARM ANZ deliverables.


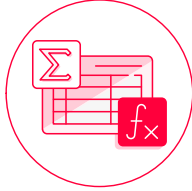


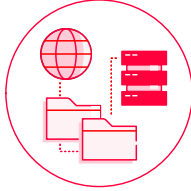
Challenge Observed	Working Group	Benefits of Recommendation	Inclusion for Future
There is a wide range of variability in how media emissions are measured across various stakeholders	<b>Metric + Methodology</b>	Consistent framework to measure GHG across 6 media types thereby improving accuracy and rigor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

## How do the solutions work together?

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








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:

 <p><b>1</b></p> <p><b>Channel Emissions Framework</b></p>	 <p><b>2</b></p> <p><b>Media Emissions Formula</b></p>	 <p><b>3</b></p> <p><b>Emissions Data Request</b></p>	 <p><b>4</b></p> <p><b>Emissions Data Hacks</b></p>	 <p><b>5</b></p> <p><b>Emissions Data Sources</b></p>
<p><b>Emissions factors to be counted in the placement of a media unit</b></p>	<p><b>Mathematical expression of the Channel Emissions Framework to calculate campaign emissions</b></p>	<p><b>Request of relevant first-party emissions data from media sellers + key intermediaries</b></p>	<p><b>Relevant guidance on challenges relative to data: missing, blunt, and equivalent</b></p>	<p><b>Relevant guidance on challenges relative to data: missing, blunt, and equivalent</b></p>
<ul style="list-style-type: none"> <li>• Consistent across channels</li> <li>• Scales based on data avail</li> <li>• Functional unit-based</li> </ul>	<ul style="list-style-type: none"> <li>• Corresponds to media planning &amp; buying pathways</li> <li>• Enables individual reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Corresponds to functional units and inventory available for purchase</li> </ul>	<ul style="list-style-type: none"> <li>• Corresponds to functional units and material steps</li> </ul>	<ul style="list-style-type: none"> <li>• Aligns on recommended syndicated data sources for lifecycle assessment</li> </ul>
<p><b>Metric + Methodology</b></p>		<p><b>Data request</b></p>		<p><b>Data Access</b></p>

In the subsequent solution-specific solutions chapters of this playbook, we go into detail on specific solution recommendations, who may want to consider using them, and when and how they should consider using them. As with all GARM work, 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' independence and they will individually have the opportunity and 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
	<b>Channel Emissions Frameworks</b>	v 1.0	v 1.0	v 1.0	v 1.0	v 1.0	v 0.5
	<b>Media Emissions Formulae</b>	v 1.0	v 1.0	v 1.0	Wave 2	Wave 2	Wave 2
	<b>Emissions Data Request</b>	Wave 2	Wave 2	Wave 2	Wave 2	Wave 2	Wave 2
	<b>Emissions Data Hacks</b>	Wave 2	Wave 2	Wave 2	Wave 2	Wave 2	Wave 2
	<b>Emissions Data Sources</b>	Wave 3	Wave 3	Wave 3	Wave 3	Wave 3	Wave 3

## 6. Metrics + Methodology: A voluntary consistent framework to measure GHG across 6 media types thereby improving accuracy and rigor

**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:**

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

**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 Carbon Calculation:
  - a. 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
  - b. The Metrics + Methodology elements can be used for post-campaign emissions reporting or carbon 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
<b>Creation</b>	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
<b>Distribution</b>	Emissions from the steps associated with media selection Emissions from ad placement [inclusive of buy-side and sell-side steps]	
<b>Consumption</b>	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
<b>Level 0: Assumed</b>	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
<b>Level 1: Enterprise</b>	Emissions data is only available at the total organizational level spanning multiple markets	Steps towards appropriation recommended in the Technical Notes may be considered
<b>Level 2: Market-level</b>	Emissions data is available for the organization and within a single geography	Steps towards appropriation recommended in the Technical Notes may be considered
<b>Level 3: Business Unit</b>	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
<b>Level 4: Media Product Level</b>	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 GARM and 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:**

<b>Channel Emissions Workflows</b>	Graphical detail of the steps an ad message takes throughout the 3 Phases, specific to buying and transmission methods
<b>Channel Emissions Frameworks</b>	Table detail of the functional units with a clear definition of the emissions, detailing source of emissions data
<b>Channel Emissions Formula</b>	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 GARM/ANZ 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.

## Location & market-based emission factors

### 2 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.

- Allow greater consistency and comparability of results.
- Method that **shall** be used when calculating emissions.

#### MARKET-BASED

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.

- 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.

## Corporate Emissions Approach:

Where formula 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
<b>First</b>	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.
<b>Second</b>	Allocated corporate emissions of the organization, including total Scope 1, Scope 2 and all relevant Scope 3 categories.
<b>Third</b>	Allocated corporate emissions of the organization including total Scope 1, Scope 2 and limited Scope 3 categories.
<b>Four</b>	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 carbon 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.

★ ★ ☆ those aspects are now covered **qualitatively**

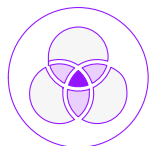
🔍 **Future data collection steps** will help to identify which parts are **more material** and which parameters have a **strong sensibility** on results.

## 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 CO<sub>2</sub>e 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 CO<sub>2</sub>e 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 carbon 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

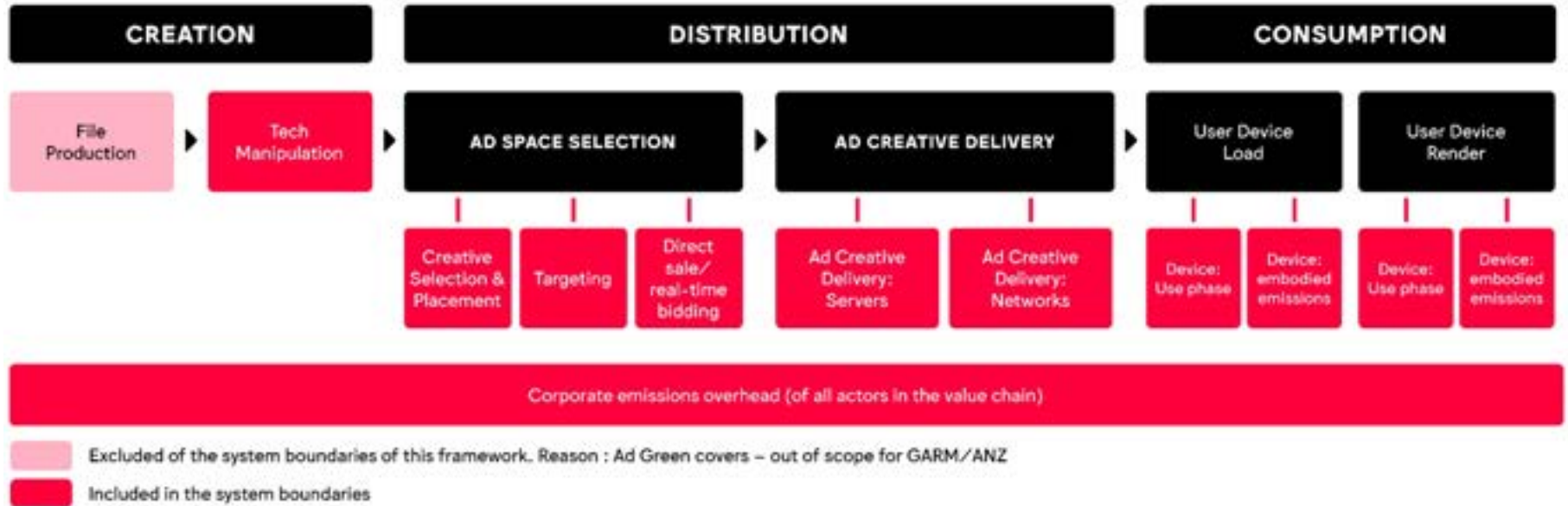
- Best practice and commonly used conversion factors are included within the GMSF and should be used wherever possible.
- Where the referenced conversion factors within the GMSF are not deemed appropriate or aligned to the media channel in question, or a required conversion factor is not available, alternative 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 prioritised 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 CO<sub>2</sub>e 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 organisation 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); 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.
- The location-based method is required in order to allow for greater consistency and comparability of results.
- Users may also separately and additionally 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.

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

## Channel Emissions Workflow: Digital v 1.0



## Channel Emissions Framework and Formula: Digital V.1.0

Phase	Step & sub-step		Physical processes involved	Formula type	Scaling factors	Expected materiality	Formulae V1
CREATION	Tech Manipulation (Multivariant Creative)	Creative storage	Additional server storage for multiple volumes of assets for the purpose of distribution.	Digital service overhead	<ul style="list-style-type: none"> <li>Number and size of assets</li> <li>Storage duration</li> </ul>	Low	$\sum \text{Number of assets} \times \text{size of asset (kB)} \times \text{time stored (yr)} \times \text{carbon impact of storage}^3 \text{ (kgCO}_2\text{e/kB/yr)} \times \text{allocation factor for the campaign}^4 \text{ (\%)}$
		Creative transcoding	Server processing for multiple volumes of assets for the purpose of distribution.	Digital service overhead	/	/	/
DISTRIBUTION	Ad Space Selection	Creative Selection & Placement	Planning of creative to go on specific inventory within a marketplace	Corporate overhead	/	/	/
		Targeting	Digital services used for all targeting activities	Use phase & Embodied	/	/	/
		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).
	Ad Space Selection	Real-time bidding	Servers processing transmission through automated buying process (SSP/DSP...)	Use Phase	<ul style="list-style-type: none"> <li>Number of impressions</li> <li>Number of paths / number of requests</li> <li>Calculation time</li> </ul>	Low to medium	$\text{Impressions} \times \text{Number of potential active paths per impression}^5 \times \text{Avails ratio} \times (1 + \text{Requests ratio}) \times (1 + \text{Responses ratio})^6 \times \text{Time of calculation per bid (s)} \times \text{Compute ratio allocated to bid processing (compute used by SSP/DSP incl. machine-learning) and reporting/analytics}^7 \text{ (\%)} \times \text{Total relevant infrastructure power incl. PUE (W)} \times \text{Carbon intensity of electricity (kgCO}_2\text{e/kWh)} \times (1 + \text{overhead of other mutualized server resources ratio}^8)$
			Embodied		Low to medium	$\text{Impressions} \times \text{Number of potential active paths per impression}^5 \times \text{Avails ratio} \times (1 + \text{Requests ratio}) \times (1 + \text{Responses ratio})^6 \times \text{Time of calculation per bid (s)} \times \text{Compute ratio allocated to bid processing (compute used by SSP/DSP incl. machine-learning) and reporting/analytics}^7 \text{ (\%)} \times \text{EF manufacturing and EOL of total relevant infrastructure (kgCO}_2\text{e)} \times \text{Average lifetime of equipment (s)} \times (1 + \text{overhead of other mutualized server resources ratio}^8)$	

The Global Media Sustainability Framework

Phase	Step & sub-step		Physical processes involved	Formula type	Scaling factors	Expected materiality	Formulae V1
DISTRIBUTION	Ad Space Selection	Real-time bidding	Networks transmission through automated buying process (SSP/DSP...)	Use phase	<ul style="list-style-type: none"> <li>Number of impressions</li> <li>Number of paths / number of requests</li> <li>Data transferred by request type</li> </ul>	Low to medium	<i>Impressions</i> * Number of potential active paths per impression <sup>5</sup> * Avails ratio * (1 + Requests ratio) * (1 + Responses ratio) <sup>6</sup> * Data transferred by request type <sup>9</sup> (kB) * Server-to-server networks energy efficiency according to network type and country <sup>10</sup> (kWh/kB) * Carbon intensity of electricity ( kgCO2e/kWh)
				Embodied		Low to medium	<i>Impressions</i> * Number of potential active paths per impression <sup>5</sup> * Avails ratio * (1 + Requests ratio) * (1 + Responses ratio) <sup>6</sup> * Data transferred by request type <sup>9</sup> (kB) * EF manufacturing & EOL amortization networks according to network type and country <sup>10</sup> (kgCO2e/kB)
	Ad Creative Delivery	Creative transmission	Ad Servers / CDN edge node processing of ad delivery on display, social, or search	Use phase	<ul style="list-style-type: none"> <li>Number of impressions</li> <li>Output data transmitted (incl. file size)</li> <li>Share of content delivered locally (CDN)</li> </ul>	Medium to high	“ <i>Impressions</i> * total server output data per impression <sup>11</sup> (kB)”  Breakdown of content delivered by ad servers vs. edge nodes <sup>12</sup> (%) * $\sum$ Number of infrastructures * datacenter or edge nodes energy of efficiency including PUE (kWh/kB output) * carbon intensity of electricity (kgCO2e/kWh) <sup>13</sup>
				Embodied			“ <i>Impressions</i> * total server output data per impression <sup>11</sup> (kB)”  (Breakdown of content delivered by ad servers vs. edge nodes <sup>12</sup> (%)) * $\sum$ Number of infrastructures * EF manufacturing and EOL of total relevant infrastructure (kgCO2e) / infrastructure output bandwidth (kB/s) / average lifetime infrastructure equipment(s) <sup>13</sup>
			Use phase	“ <i>Impressions</i> * total data transferred on network per impression <sup>11</sup> (kB)”  * $\sum$ Number of infrastructures (consumption breakdown between types of network (%) * energy efficiency according to network type <sup>14</sup> and country (kWh/kB))  * $\sum$ Number of infrastructures (consumption breakdown between countries of servers/edges nodes <sup>12</sup> and & users(%)) * carbon intensity of electricity (kgCO2e/kWh)			
			Embodied	“ <i>Impressions</i> * total data transferred on network per impression <sup>11</sup> (kB)”  * $\sum$ Number of infrastructures (consumption breakdown between types of network (%) * EF manufacturing & EOL amortization networks according to network type <sup>14</sup> and country (kgCO2e/kB)” <sup>13</sup>			
	Ad Creative Delivery	Creative transmission	Networks transmission of ad delivery from ad server / CDN edge node to user network as display, social, or search	Use phase	Medium to high	“ <i>Impressions</i> * total data transferred on network per impression <sup>11</sup> (kB)”  * $\sum$ Number of infrastructures (consumption breakdown between types of network (%) * energy efficiency according to network type <sup>14</sup> and country (kWh/kB))  * $\sum$ Number of infrastructures (consumption breakdown between countries of servers/edges nodes <sup>12</sup> and & users(%)) * carbon intensity of electricity (kgCO2e/kWh)	
			Embodied	“ <i>Impressions</i> * total data transferred on network per impression <sup>11</sup> (kB)”  * $\sum$ Number of infrastructures (consumption breakdown between types of network (%) * EF manufacturing & EOL amortization networks according to network type <sup>14</sup> and country (kgCO2e/kB)” <sup>13</sup>			



The Global Media Sustainability Framework

Phase	Step & sub-step		Physical processes involved	Formula type	Scaling factors	Expected materiality	Formulae V1
CONSUMPTION	Device Display	User device load	Download / stream of creative to the user device. Includes embodied emissions of devices.	Use phase	<ul style="list-style-type: none"> <li>Data transferred (incl. file size)</li> <li>Device type</li> </ul>	Low	$\frac{\text{Data transferred}^{15}(\text{kB})}{\text{Broadband speed breakdown by country and by network type (kB/s)}}$ $\sum \text{Devices}^{17}$ <ul style="list-style-type: none"> <li>(Device mix by type and country (%))</li> <li>* Device power consumption to maintain active connection<sup>16</sup> (W)</li> <li>* time conversion ratio (h/s)</li> <li>* carbon intensity of electricity (kgCO<sub>2</sub>e/kWh))</li> </ul>
				Embodied		Low	$\frac{\text{Data transferred}^{15}(\text{kB})}{\text{Broadband speed breakdown by country and by network type (kB/s)}}$ $\sum \text{Devices}^{17}$ <ul style="list-style-type: none"> <li>(Device mix by type and country (%))</li> <li>* EF manufacturing &amp; and EOL amortization of devices, share of connectivity<sup>16</sup> (kgCO<sub>2</sub>e/unit)</li> <li>/ total active used time over lifetime by device type (s of active use over full lifetime))</li> </ul>
	User device render	Render and display of creative on the user device. Includes embodied emissions of devices.	Use phase	<ul style="list-style-type: none"> <li>Time displayed</li> <li>Device type</li> </ul>	High	$\sum \text{Devices}^{17}$ <ul style="list-style-type: none"> <li>(Device mix by type and country (%))</li> <li>* Time displayed on device (s)</li> <li>* Device render power consumption<sup>16</sup> (W)</li> <li>* time conversion ratio (h/s)</li> <li>* carbon intensity of electricity (kgCO<sub>2</sub>e/kWh))</li> </ul>	
				Embodied		High	$\sum \text{Devices}^{17}$ <ul style="list-style-type: none"> <li>(Device mix by type and country (%))</li> <li>* Time displayed on device (s)</li> <li>* EF manufacturing &amp; and EOL amortization of devices, share of render<sup>16</sup> (kgCO<sub>2</sub>e/unit)</li> <li>/ total active used time over lifetime by device type (s of active use over full lifetime))</li> </ul>
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	$\sum \text{Number of entities}$ <ul style="list-style-type: none"> <li>Total relevant annual corporate emissions<sup>1</sup>(kgCO<sub>2</sub>e)*allocation factor for the campaign<sup>2</sup>)</li> </ul>

[Click here for the full recommended framework](#)

## Footnotes for digital

### Corporate emissions overhead:

<sup>1</sup>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...)

<sup>2</sup>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:

<sup>3</sup>Servers impact (that can be split by lifecycle phase) based on server type, efficiency and location (simplified formula).

<sup>4</sup>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):

<sup>5</sup>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).

<sup>6</sup>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.

<sup>7</sup>Portion of physical resources dedicated to bid processing, reporting, machine learning, analytics... is a share of total compute power. Dedicated vCPUs or costs are a good lead.

<sup>8</sup>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.

<sup>9</sup>Taking into account different sizes for avails, bid requests and bid responses (incl. all transferred assets).

<sup>10</sup>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:

<sup>11</sup>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...

<sup>12</sup>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). Country could usually be assumed to be the same as the user.

<sup>13</sup>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).

<sup>14</sup>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:

<sup>15</sup>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...

<sup>16</sup>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.

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

The Global Media Sustainability Framework



Avails ratio : Taking into account avail not even sent (e.g. old link, SPO) even if potential path



Requests ratios: Taking into account bid request not sent after optimization (e.g., traffic shaping / bid throttling), usually on SSP side



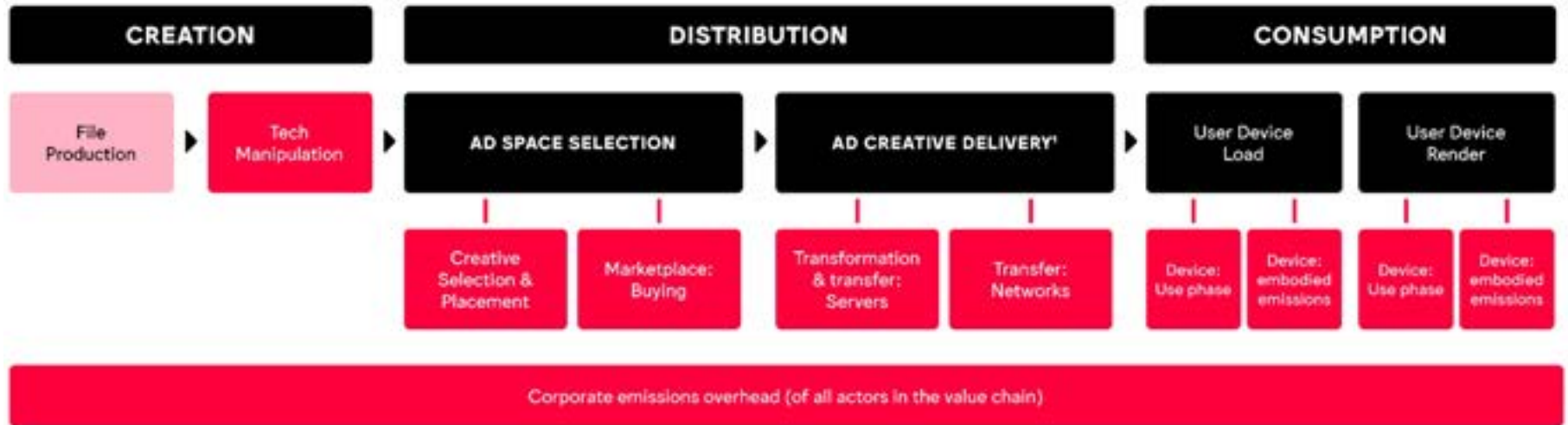
Responses ratio: taking into account bid response not always sent, usually on DSP side



Fully activated path

# TV / Video: Channel Emissions Workflows, Channel Emissions Framework & Channel Emissions Formula

## Channel Emissions Workflow: Video / VOD v 1.0



<sup>1</sup> 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 of the system boundaries of this framework. Reason : Ad Green covers – out of scope for GARM./ANZ
- Included in the system boundaries

## 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	
CREATION	Tech Manipulation (Multivariant Creative)	Creative storage	Additional server storage for multiple volumes of assets for the purpose of distribution.	Digital service overhead	<ul style="list-style-type: none"> <li>Number and size of assets</li> <li>Storage duration</li> </ul>	Low	$\sum$ Number of assets (size of asset (kB) * time stored (yr) * carbon impact of storage <sup>1</sup> (kgCO <sub>2</sub> e/kB/yr) * allocation factor for the campaign <sup>2</sup> (%))	
		Creative transcoding	Server processing for multiple volumes of assets for the purpose of distribution.	Digital service overhead	/	/	/	
DISTRIBUTION	Ad Space Selection	Creative Selection & Placement	Planning of creative to go on specific inventory within a marketplace	Corporate 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	<i>Import from digital</i>		
		Networks transmission through SSP/DSP buying process	Use phase					
	Ad Creative Delivery	Transformation & Transfer	Linear broadcast (TNT/SAT)	Servers processing of ad delivery (broadcast)	Use phase	<ul style="list-style-type: none"> <li>Number of diffusions</li> <li>Spot duration</li> <li>Bitrate</li> <li>Number of outputs</li> </ul>	Low to medium	Number of diffusions * Spot duration (s) * bitrate before transcoding (kB/s) * Number of media outputs <sup>9</sup> / Concurrent transcoding factor <sup>10</sup> * Redundancy factor * Infrastructure efficiency per data transferred including PUE (kWh/kB) * carbon intensity of electricity (kgCO <sub>2</sub> e/kWh)
					Embodied		Low to medium	Number of diffusions * Spot duration (s) / average lifetime of infrastructure equipment (s) * EF Manufacturing and EOL of infrastructure equipment (kgCO <sub>2</sub> e)

The Global Media Sustainability Framework

Phase	Step & sub-step		Physical processes involved	Formula type	Scaling factors	Expected materiality	Formulae V1		
DISTRIBUTION	Ad Creative Delivery	Transformation & Transfer	Linear broadcast (TNT/SAT)	Networks transmission of ad delivery (broadcast)	Use phase	<ul style="list-style-type: none"> <li>Number of diffusions</li> <li>Spot duration</li> </ul>	Low to medium	$\sum$ Number of network type Number of diffusions * Spot duration (s) * consumption breakdown between countries of servers / users (%) * network energy intensity according to network type <sup>8</sup> and country (kWh/s) * time conversion ratio (h/s) * consumption breakdown between countries of servers / users (%) * carbon intensity of electricity (kgCO <sub>2e</sub> /kWh)	
					Embodied		Low to medium	$\sum$ Number of network type Number of diffusions * Spot duration (s) * EF manufacturing & EOL networks amortization per second according to network type <sup>8</sup> and country (kgCO <sub>2e</sub> /s)	
			Linear multicast (IPTV)	Servers processing and networks transmission of ad (multicast)	Use phase & Embodied	Same as linear broadcast (see above).			
			Non-linear (& linear) unicast (CTV/OTT/VOD...)	Servers processing of ad delivery (unicast)	Use phase	<ul style="list-style-type: none"> <li>Data transferred (kB)</li> <li>Location</li> </ul>	Medium to high	$\sum$ Number of infrastructures Views * total server output data per view <sup>5</sup> (kB) * Number of media outputs <sup>9</sup> / Concurrent transcoding factor <sup>10</sup> (Breakdown of content delivered by ad servers vs. edge nodes <sup>6</sup> (%)) * datacenter or edge nodes energy efficiency including PUE (kWh/kB output) * carbon intensity of electricity(kgCO <sub>2e</sub> /kWh) <sup>7</sup>	
					Embodied	Data transferred (kB)	Medium to high	$\sum$ Number of infrastructures Views * total server output data per view <sup>5</sup> (kB) * Number of media outputs <sup>9</sup> / Concurrent transcoding factor <sup>10</sup> (Breakdown of content delivered by ad servers vs. edge nodes <sup>6</sup> (%)) * EF manufacturing and EOL of total relevant infrastructure (kgCO <sub>2e</sub> ) / infrastructure output bandwidth (kB/s) / average lifetime of infrastructure equipment(s) <sup>7</sup>	
				Networks transmission of ad delivery (unicast)	Use phase	<ul style="list-style-type: none"> <li>Data transferred (kB)</li> <li>Location</li> </ul>	Medium to high	$\sum$ Number of infrastructures Views * total data transferred on network per view <sup>5</sup> (kB) (consumption breakdown between types of network (%)) * energy efficiency according to network type <sup>8</sup> and country (kWh/kB)	
		Embodied			Data transferred (kB)	Medium to high	$\sum$ Number of infrastructures Views * total data transferred on network per view <sup>5</sup> (kB) (consumption breakdown between types of network (%)) * EF manufacturing & EOL amortization networks according to network type <sup>8</sup> and country (kgCO <sub>2e</sub> /kB) <sup>7</sup>		

The Global Media Sustainability Framework

Phase	Step & sub-step	Physical processes involved	Formula type	Scaling factors	Expected materiality	Formulae V1	
CONSUMPTION	Device Display	User device load	Use phase	<ul style="list-style-type: none"> <li>Data transferred (incl. file size)</li> <li>Device type</li> </ul>	Low	$\frac{\text{Data transferred}^{11}(\text{kB})}{\text{Broadband speed breakdown by country and by network type (kB/s)}}$ $*\sum \text{Devices}^3$ <p>(Device mix (%))                      * Device power consumption to maintain active connection<sup>12</sup> (W))                      * time conversion ratio (h/s)                      * carbon intensity of electricity (kgCO<sub>2</sub>e/kWh)</p>	
			Embodied		Low	$\frac{\text{Data transferred}^{11}(\text{kB})}{\text{Broadband speed breakdown by country and by network type (kB/s)}}$ $*\sum \text{Devices}^3$ <p>(Device mix (%))                      * EF manufacturing and EOL amortization of devices, share of connectivity<sup>12</sup> (kgCO<sub>2</sub>e/unit)                      / total active used time over lifetime by device type (s of active use over full lifetime))</p>	
		User device render	Use phase	<ul style="list-style-type: none"> <li>Time displayed</li> <li>Device type</li> </ul>	High	$\frac{\text{Time displayed on device (s)}}{\text{Device mix (%)}}$ $*\sum \text{Devices}^3$ <p>* Device render power consumption<sup>12</sup> (W))                      * time conversion ratio (h/s)                      * carbon intensity of electricity (kgCO<sub>2</sub>e/kWh)</p>	
			Embodied		High	$\frac{\text{Time displayed on device (s)}}{\text{Device mix (%)}}$ $*\sum \text{Devices}^3$ <p>*EF manufacturing &amp; EOL Amortization of devices, share of render<sup>2</sup> (kgCO<sub>2</sub>e/unit)                      / total active used time over lifetime by Device type (s of active use over full lifetime))</p>	
	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	$\sum \text{Number of assets}$ <p>Total relevant annual corporate emissions<sup>1</sup> (kgCO<sub>2</sub>e)                      *allocation factor for the campaign<sup>2</sup></p>

[Click here for the full recommended framework](#)

## Footnotes for TV

### Corporate emissions overhead:

<sup>1</sup>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...)

<sup>2</sup>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:

<sup>3</sup>Servers impact (that can be split by lifecycle phase) based on server type, efficiency and location (simplified formula).

<sup>4</sup>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:

<sup>5</sup> 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

<sup>6</sup> 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)

<sup>7</sup> 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).

<sup>8</sup> 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).

<sup>9</sup> For a single ad, there may be more than one version required for transcoding purposes

<sup>10</sup> Factor taking into account simultaneous encoding of assets

### Consumption;

<sup>11</sup> 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...

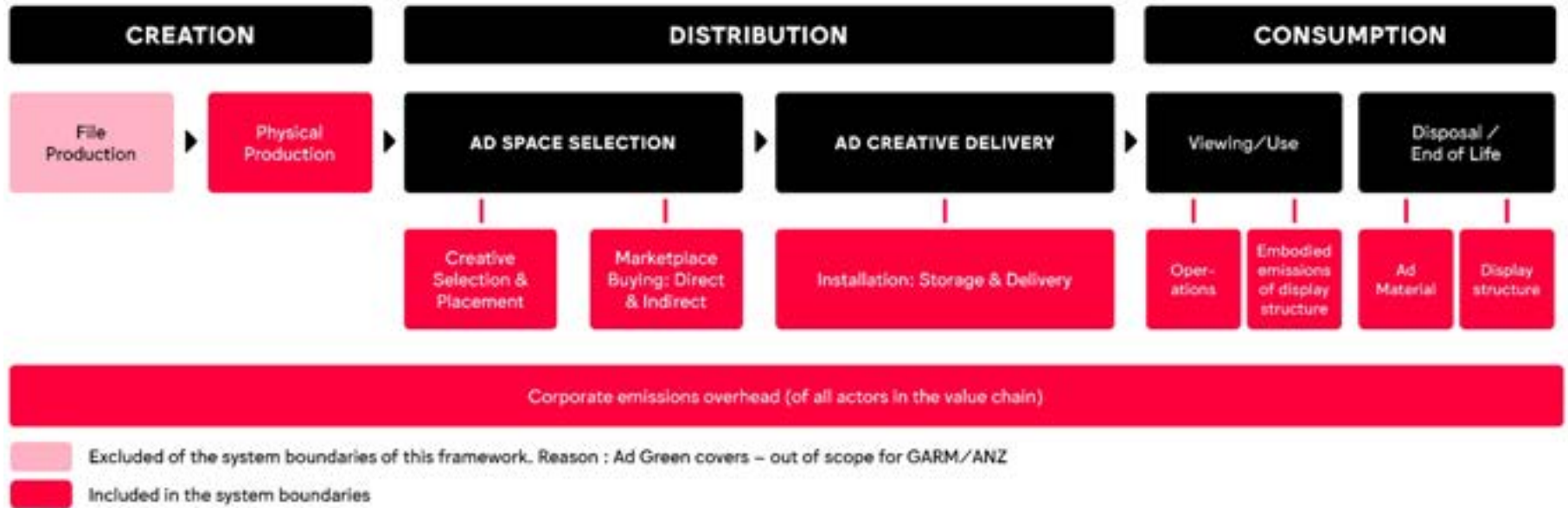
<sup>12</sup> Additional studies are needed to fully modelized difference of screen power (render) vs. active connection (load) so it is expected to be modelled globally.

<sup>13</sup> 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).

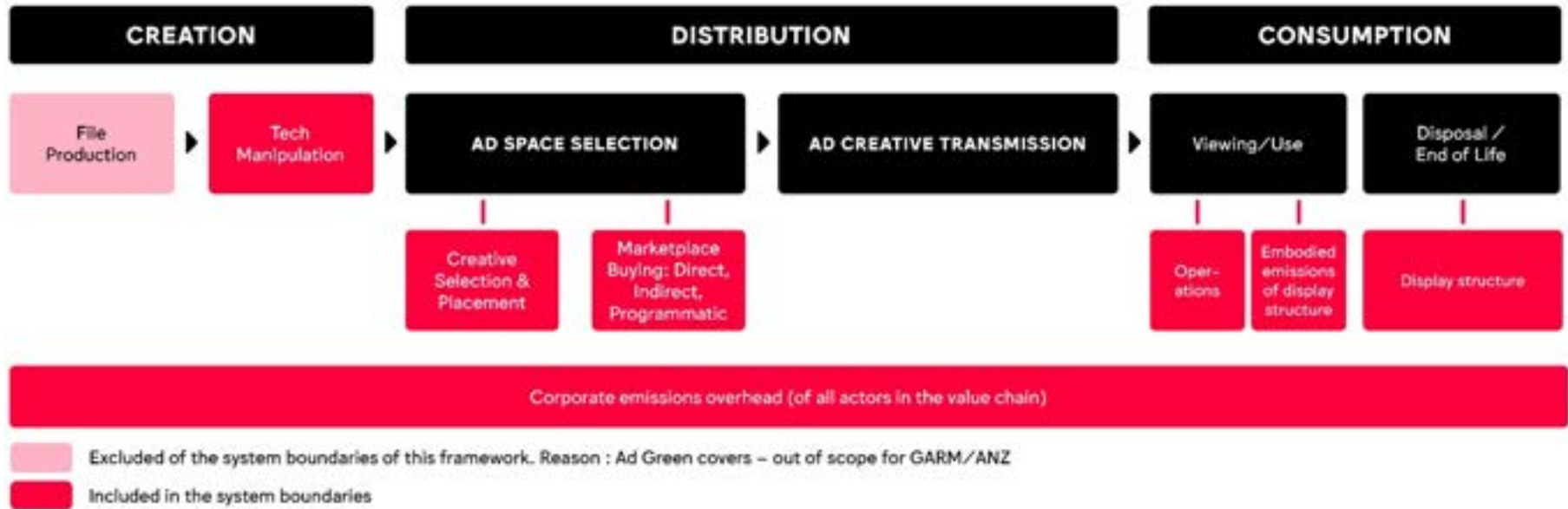


# Out-of-Home: Channel Emissions Workflows, Channel Emissions Framework, Channel Emissions Formula

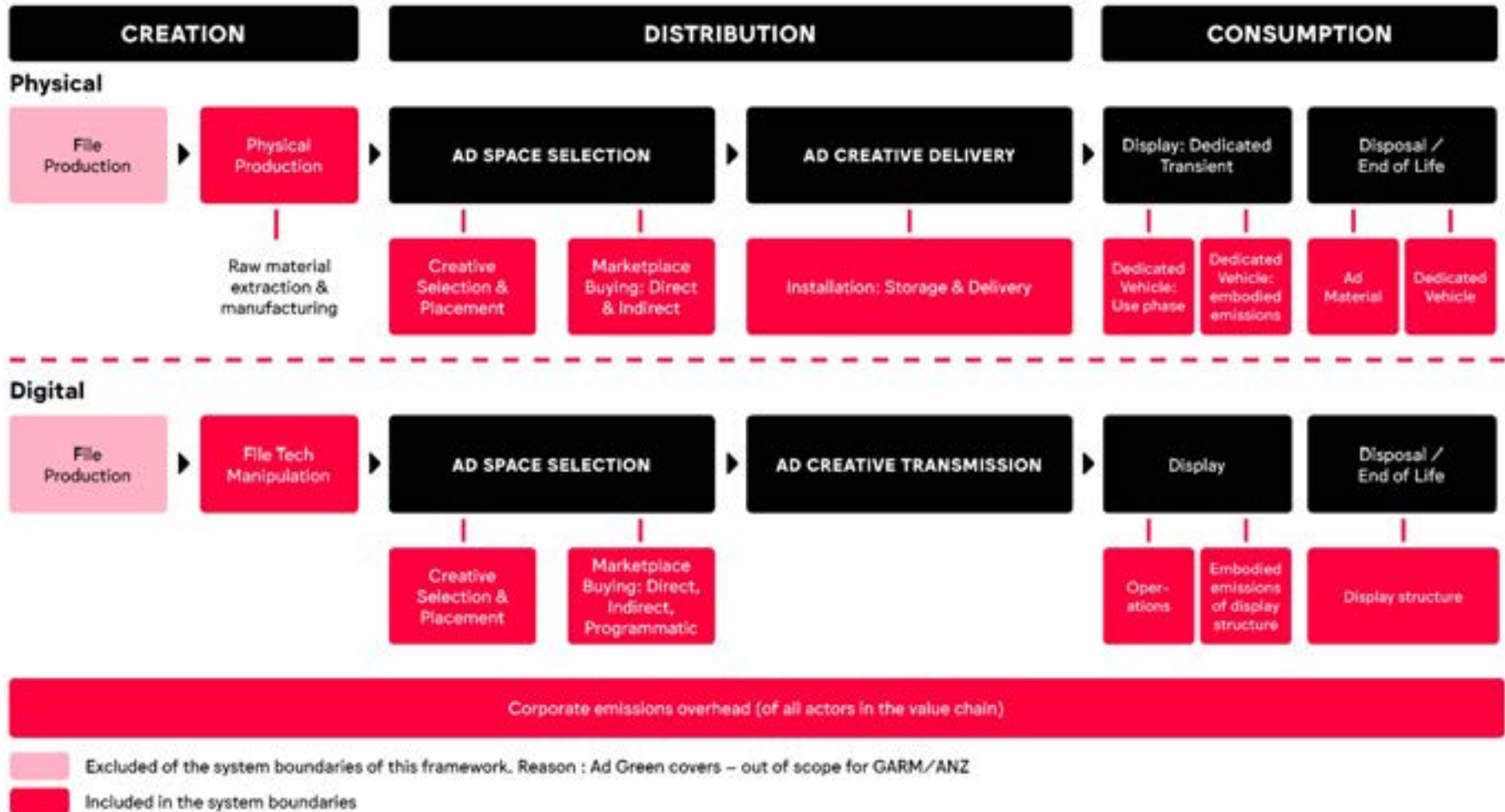
## Channel Emissions Workflow: OOH: Physical / V.1.0



### Channel Emissions Workflow: OOH / Digital / V.1.0



## Channel Emissions Workflow: OOH / Transient / V.1.0



## Channel Emissions Framework & Formula: OOH / V.1.0

Phase	Step & sub-step		Physical processes involved	Formula type	Formulae V1
CREATION	Creative Production		Development of creative	AdGreen methodology	Import kgCO2e from AdGreen calculation
	Physical Production		Full LCA impact based on material supply chain, transformation, printing, creating finished product	LCA GHG emission factors	$\sum (i = 1 \text{ to } n) (X_i * EF_i)$ 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
DISTRIBUTION	Demand: Selection & Targeting	Creative selection	Process to select creative format	none	none
		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
		Geographic / Audience selection	Location of sites used for campaign	none	No material emissions from this step. Output of these step (Geographic location of sites) used in transportation emissions estimates
	Marketplace: Buying	Direct	Buying process from advertiser to media owner	GARM/ANZ direct formula	insert from TV standard
		Indirect	Buying process through agency and/or specialist	GARM/ANZ indirect formula	insert from TV standard
		Programmatic	Buying process through SSP/DSP	GARM/ANZ programmatic formula	insert from programmatic standard
	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
		Physical - transportation, installation	Transportation from storage to display locations Installation	Operational emission factors	Transport: $\sum (i = 1 \text{ to } n) (D_i * EF_{Vi})$ i is the vehicle type; Di is 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: $\sum (i = 1 \text{ to } n) (X_i * EF_{Ii})$ i is the format type; Xi is the number of format i; EFli is the emissions factor for the installation of format i

The Global Media Sustainability Framework

Phase	Step & sub-step		Physical processes involved	Formula type	Formulae V1
<b>DISTRIBUTION</b>	Installation: Storage & Delivery	Transient - transportation, installation	Transportation of mobile platforms to installation facility Installation	Operational emission factors	Transport: $\sum (i = 1 \text{ to } n) (D_i * EFV_i)$ i is the vehicle type; D <sub>i</sub> is the total distance( km) travelled to installation sites by the vehicle type; EFV <sub>i</sub> is the emissions factor for the vehicle type kg CO <sub>2</sub> e/km installation: $\sum (i = 1 \text{ to } n) (X_i * EFI_i)$ i is the format type; X <sub>i</sub> is the number of format i; EFI <sub>i</sub> 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)
		Digital	Digital transmission to display device	none	none
<b>CONSUMPTION</b>	Display: Viewing	Transient (not dedicated to advertising)	Assume the advertising does not create any change to mobile platform deployment for other purposes	none	none
		Dedicated Transient--operations	Energy required to move dedicated ad vehicle	Operational emission factors	transport: $\sum (i = 1 \text{ to } n) (D_i * EFV_i)$ i is the vehicle type; D <sub>i</sub> is the total distance( km) travelled to installation sites by the vehicle type; EFV <sub>i</sub> is the emissions factor for the vehicle type kg CO <sub>2</sub> e/km
		Dedicated Transient--embedded	Embedded emissions from dedicated display vehicle	Embedded emissions factors	$\sum (i = 1 \text{ to } n) EEV_i * (T/LT_i)$ i is the vehicle type; EEV <sub>i</sub> is the total embedded emissions for the vehicle type kg CO <sub>2</sub> e; T is hours ad displayed; LT <sub>i</sub> is hours of total time of depreciation for vehicle type i
		Digital--operations	Energy consumed for digital display	Operational emission factors	kWh used during display time * location based emission factor for grid kg CO <sub>2</sub> e/kWh
		Digital--embedded	Embedded emissions from display structure	Embedded emissions factors	$\sum (i = 1 \text{ to } n) EED_i * (T/LT_i)$ i is the display type; EED <sub>i</sub> is the total embedded emissions for the display type kg CO <sub>2</sub> e; T is hours ad displayed; LT <sub>i</sub> is hours of total time of depreciation for display type i
		Physical--operations	Energy consumed for illumination, mechanical movement	Operational emission factors	kWh used during display time * emission factor for grid kg CO <sub>2</sub> e/kWh
		Physical--embedded	Embedded emissions from display structure	Embedded emissions factors	$\sum (i = 1 \text{ to } n) EEDS_i * (T/LT_i)$ i is the display type; EEDS <sub>i</sub> is the total embedded emissions for the display structure type kg CO <sub>2</sub> e; T is hours ad displayed; LT <sub>i</sub> is hours of total time of depreciation for display structure type i
	Disposal & End of Life	Transient (not dedicated) ad material	Disposal/end of life of material removed from mobile platform	Standard disposal/EoL emissions factors	$\sum (i = 1 \text{ to } n) (M_i * EFM_i)$ i is the ad material type; M <sub>i</sub> is the mass of the ad material kg; EFM <sub>i</sub> is the weighted average emissions factor for end-of-life action kg CO <sub>2</sub> e/km EFM <sub>i</sub> = % * EFM-recycled + % * ERM-landfill + % * EFM-incineration
		Dedicated Transient mobile platform	Disposal/end of life for mobile platforms	Prorated disposal/EoL emissions factors	$\sum (i = 1 \text{ to } n) DEV_i * (T/LT_i)$ i is the vehicle type; DEV <sub>i</sub> is the total end of life emissions for the vehicle type kg CO <sub>2</sub> e; T is hours ad displayed; LT <sub>i</sub> is hours of total time of depreciation for vehicle type i

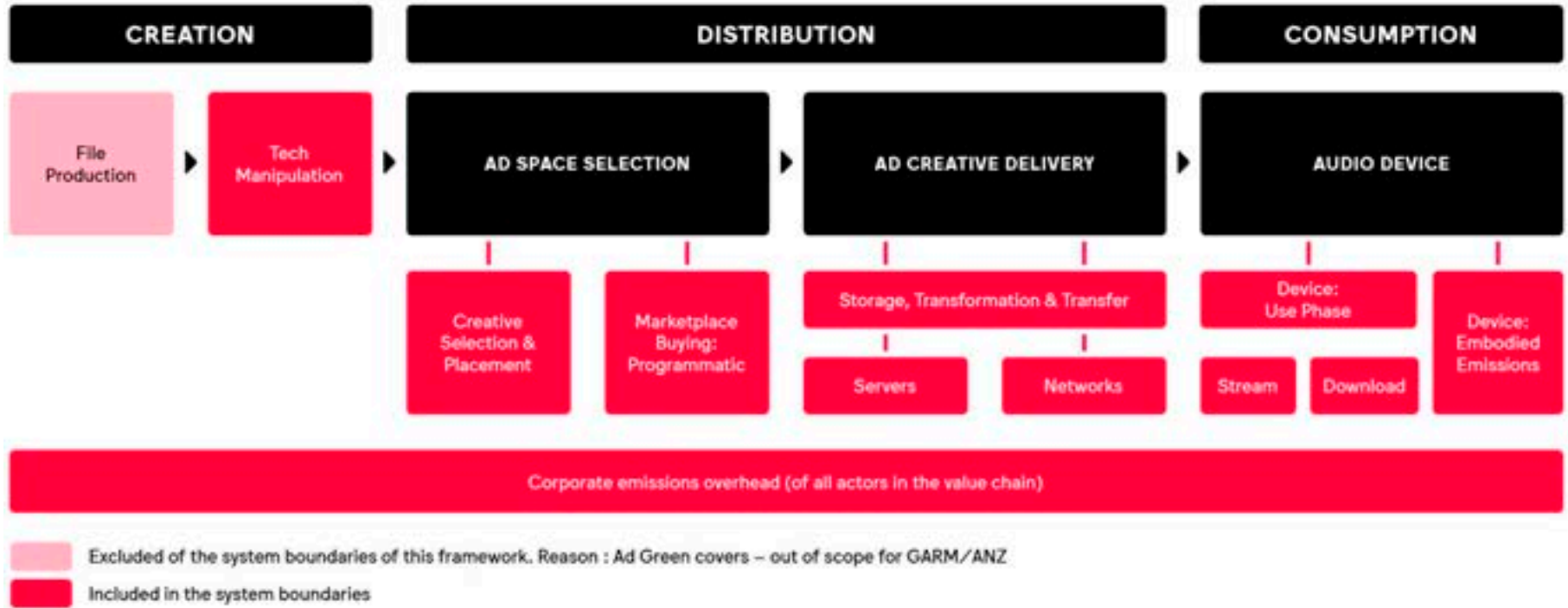
The Global Media Sustainability Framework

Phase	Step & sub-step		Physical processes involved	Formula type	Formulae V1
CONSUMPTION	Disposal & End of Life	Physical - ad material	Disposal/end of life of material removed from display structures	Standard disposal/EoL emissions factors	$\sum (i = 1 \text{ to } n) (M_i * EFM_i)$ i is the ad material type; M <sub>i</sub> is the mass of the ad material kg; EFM <sub>i</sub> is the weighted average emissions factor for end-of-life action kg CO <sub>2</sub> e/km EFM <sub>i</sub> = % * EFM-recycled + % * EFM-landfill + % * EFM-incineration
		Physical - display structure	Disposal/end of life of display structures	Prorated disposal/EoL emissions factors	$\sum (i = 1 \text{ to } n) DED_i * (T/LT_i)$ i is the display type; DED <sub>i</sub> is the total end of life emissions for the display type kg CO <sub>2</sub> e; T is hours ad displayed; LT <sub>i</sub> is hours of total time of depreciation for display type i
		Digital display structure	Disposal/end of life of display structures	Prorated disposal/EoL emissions factors	$\sum (i = 1 \text{ to } n) DEDS_i * (T/LT_i)$ i is the display type; DEDS <sub>i</sub> is the total end of life emissions for the display structure type kg CO <sub>2</sub> e; T is hours ad displayed; LT <sub>i</sub> is hours of total time of depreciation for display structure type i
ALL	Corporate Emissions overhead	Corporate overhead emissions allocation	Allocated organizational emissions attributed to the specific campaign across ALL entities in the campaign value chain		$\sum (i = 1 \text{ to } n) CE_i * AF_i$ i is the value chain entity (ranging from publisher to adtech to agency, covering ALL entities involved with the campaign); CE <sub>i</sub> is the total annual corporate emissions for entity i in kg CO <sub>2</sub> e; AF <sub>i</sub> 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

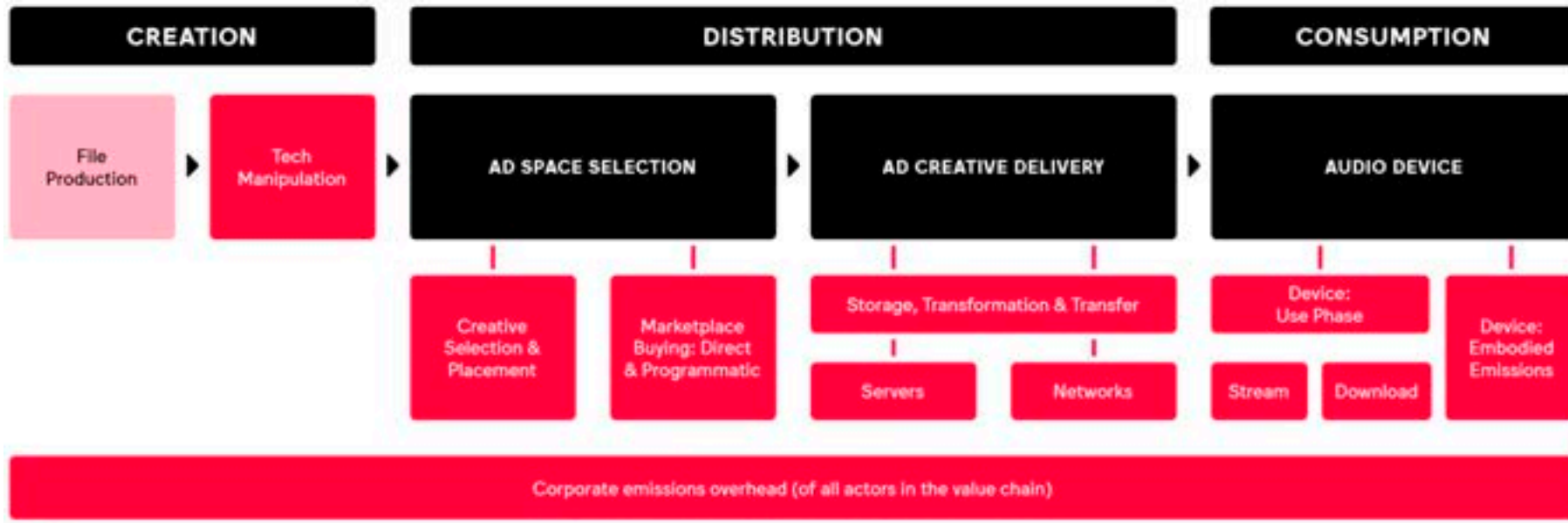
[Click here for the full recommended framework](#)

# Radio / Audio: Channel Emissions Workflows, Channel Emissions Framework

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



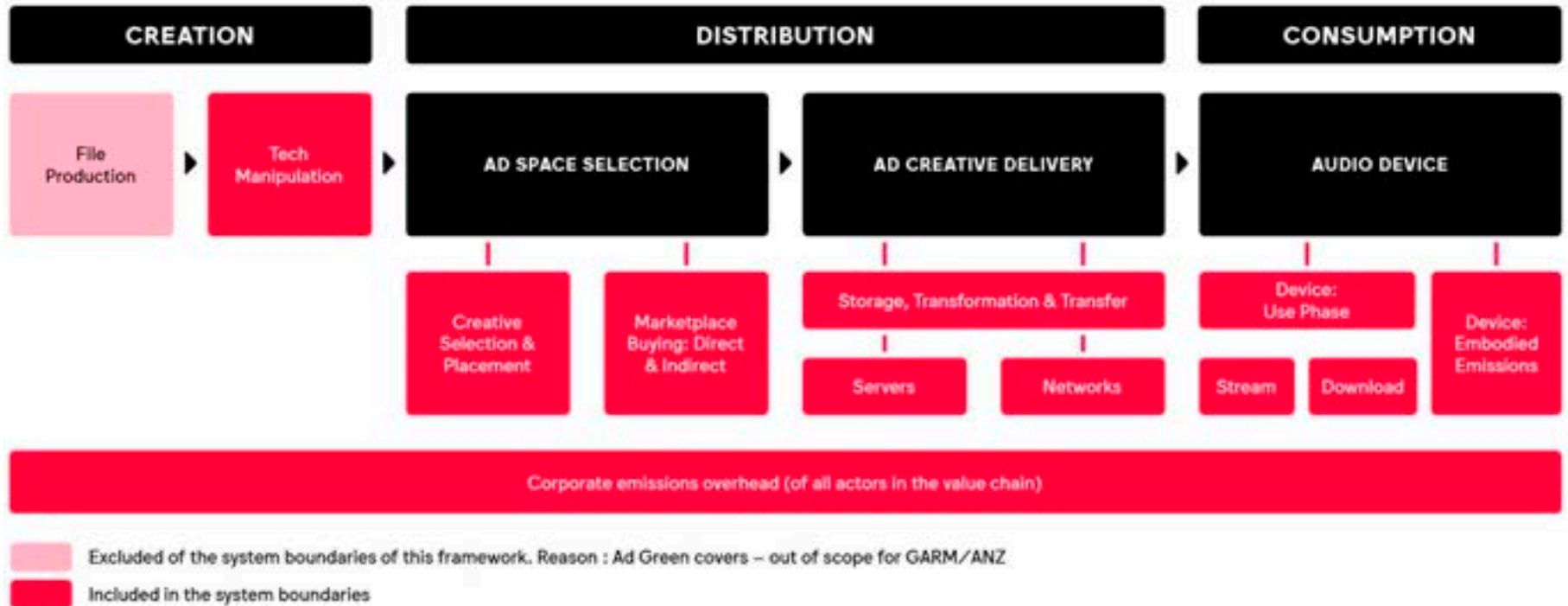
### Channel Emissions Workflow: Radio / Linear / DAB V. 1.0



- Excluded of the system boundaries of this framework. Reason : Ad Green covers – out of scope for GARM/ANZ.
- Included in the system boundaries



### Channel Emissions Workflow: Radio / Satellite / V.1.0

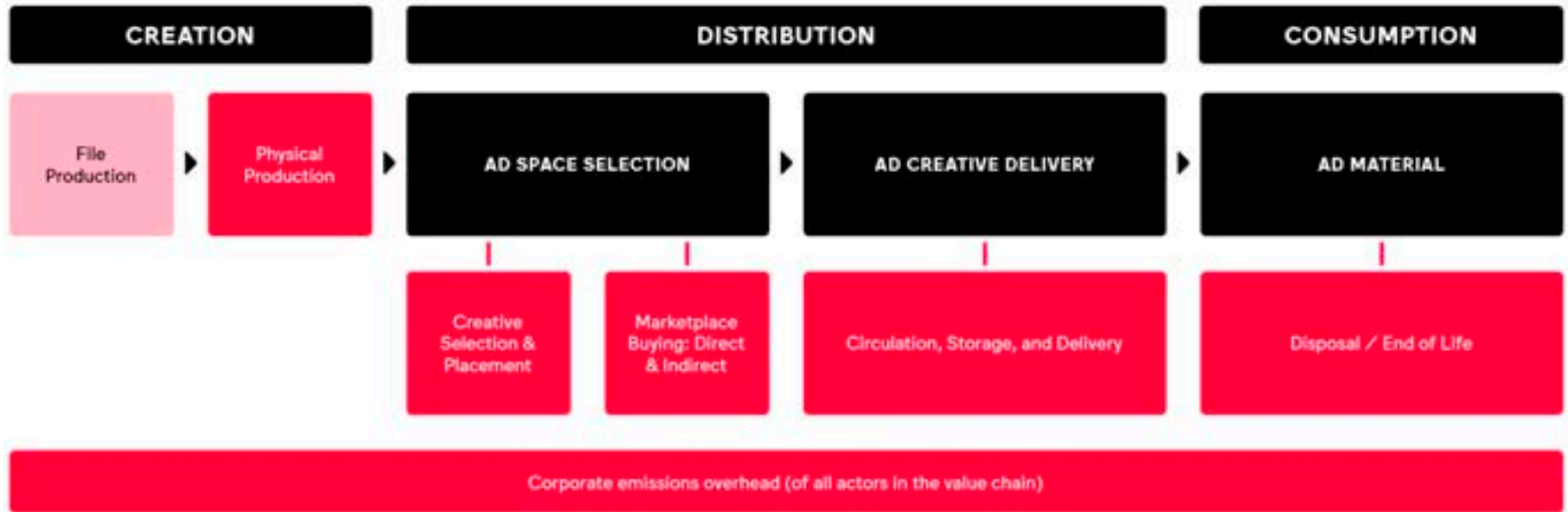


## Channel Emissions Framework: Radio / V.1.0

Phase	Step & Sub-Step		Data Owners	Definition	Data Inputs for Calculation	
CREATION	File Production	Production (Creative Development)	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	
		Post Production		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 <b>OR</b> Use average storage time	
	Storage (Creative Development)					
	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	
		User 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.	$\sum \text{Number of entities} \quad (\text{Total relevant annual corporate@emissions}^1(\text{kgCO}_2\text{e}) @*\text{allocation factor for@the campaign}^2)$	

# Print: Channel Emissions Workflows, Channel Emissions Framework

## Channel Emissions Workflow: Print / V.1.0



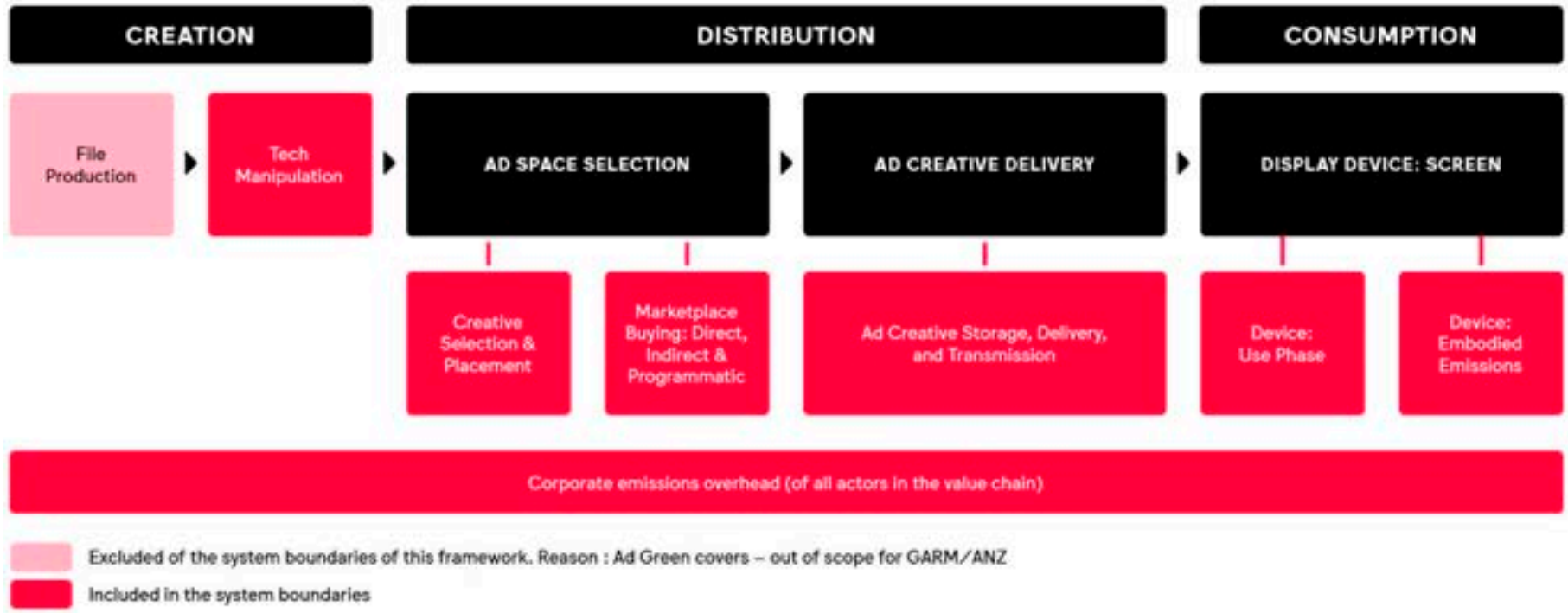
- Excluded of the system boundaries of this framework. Reason : Ad Green covers – out of scope for GARM/ANZ.
- Included in the system boundaries

## 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)	
	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
		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
	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.	$\sum \text{Number of entities} \times (\text{Total relevant annual corporate@emissions}^1 \text{ (kgCO2e)} @ * \text{allocation factor for@the campaign}^2)$	

# Cinema: Channel Emissions Workflows, Channel Emissions Framework

## Channel Emissions Workflow: Cinema / V.0.5



## 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 <sup>1</sup> (kgCO <sub>2</sub> e) @ allocation factor for the campaign <sup>2</sup> )	

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

<p><b>What is the context and purpose of this recommendation?</b></p>	<p>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.</p> <p>This is a voluntary data form that media industry stakeholders may use for emissions reporting and or emissions data requests.</p>
<p><b>What is this recommendation and what questions does it help answer?</b></p>	<p>Efficient mechanism to collect first party emissions data from media sellers and value chain partners</p> <ul style="list-style-type: none"> <li>• What first-party emissions data is needed to help measure the environmental impact of a media placement?</li> <li>• How can we efficiently and consistently collect and share the data that is needed for the channel emissions formulae</li> </ul>
<p><b>What is included in the recommendation?</b></p>	<p>A voluntary data request and reporting template that asks key organizational information that is not commercially sensitive on sustainability efforts</p>
<p><b>What is coming next?</b></p>	<p>Additional voluntary nonconfidential channel-specific data requests based on the channel emissions formulae</p>
<p><b>Where does this recommendation fit into the media process?</b></p>	<p>This voluntary request form may be used during the following steps in the media cycle:</p> <ol style="list-style-type: none"> <li>1. On a set regular interval (e.g., end of year reporting, an annual media planning cycle, or post-activity reporting cycle)</li> <li>2. On a campaign-specific interval (e.g., ahead of or after)</li> </ol>
<p><b>What types of organizations will use the recommendation and how?</b></p>	<ul style="list-style-type: none"> <li>• Media sellers may use this as a self-reporting template to answer media agency, advertiser, or sustainability solution provider requests (e.g., RFI's)</li> <li>• 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</li> </ul>
<p><b>What considerations should be taken into account?</b></p>	<p>Organizations using this form should not publish company or commercially sensitive information or any other confidential information</p> <p>Organizations should make sure that they are compliant with their own internal compliance processes to ensure data accuracy and confidentiality policies are adhered to</p>

[Click here for the full recommended framework](#)

## 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 recommended framework](#)



## Monitoring: Voluntary framework to measure the progress of solutions across industry stakeholders

<b>What is the context and purpose of this recommendation?</b>	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.
<b>What is this recommendation and what questions does it help answer?</b>	Efficient mechanism to collect first party emissions data from media sellers and value chain partners <ul style="list-style-type: none"><li>• What elements of the voluntary GMSF has the partner chosen to adopt?</li><li>• What is the relative penetration of each voluntary GMSF recommendation, and which ones are most often adopted?</li></ul>
<b>What is included in the recommendation?</b>	A voluntary monitoring framework that covers key elements of the GMSF and the major steps and solutions considered therein
<b>What is coming next?</b>	Official circulation to relevant stakeholders in January, with a due date of April, with reporting for June
<b>Where does this recommendation fit into the media process?</b>	This solution sits outside the media process and is designed to help GARM and Ad Net Zero learn about the effectiveness of their voluntary industry frameworks
<b>What types of organizations will use the recommendation and how?</b>	All relevant media partners involved in GARM and Ad Net Zero will be invited to fill out a monitoring template on the cycle expressed above.
<b>What considerations should be taken into account?</b>	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 recommended framework](#)



## 7. Wave 2 & Beyond: Future Solutions

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, GARM and 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:

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

## 8. Appendix

### Frequently Asked Questions

#### What are GARM and Ad Net Zero?

The Global Alliance for Responsible Media (GARM) was founded in 2019 as a WFA-led initiative. GARM is a voluntary advertiser-led cross industry initiative to address the challenge of harmful content on digital media platforms and its monetization through advertising. In this work, GARM has pioneered a way of working to produce open, voluntary industry frameworks, standards and solutions that enhance transparency, control and accountability. In March 2023, GARM expanded its focus beyond brand safety and partnered with Ad Net Zero to develop a workstream dedicated to sustainability, particularly in the context of media planning and buying.

Ad Net Zero is a not-for-profit initiative set up to help the global advertising industry tackle the climate emergency. This includes the production, distribution, and consumption of advertising and provides the industry with an Action Plan to guide its transition to becoming net zero.

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

In March 2023, Ad Net Zero joined forces with WFA's Global Alliance for Responsible Media (GARM) to accelerate the establishment of a standard framework for measuring the GHG emissions from media campaigns, utilizing the learnings and processes gleaned from GARM's brand safety and suitability framework launched in June 2022. 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 rigor 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?

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The Global Media Sustainability Framework is based on voluntary work from Working Groups, voluntary submissions to GARM and Ad Net Zero. This is similar to the process Union des Marques ran in France via OneFrame, the French industry standard, for different channels or markets. By inviting these organizations into the 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?

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**Advertisers:** Advertisers who may work 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 greenhouse gas emissions within their media supply chain, advertisers may voluntarily decide to identify most carbon 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 request to help 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 carbon 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 request to help more easily get access to first party media seller and supply chain emissions data.

## Who can help me implement this?

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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, GARM and 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 GARM & Ad Net Zero will publish the data that will be requested, as well as the preferred granularity, with a pathway to improving the data. GARM and ANZ will make all documentation publicly available to help implementation.

## How often will the Global Media Sustainability Framework be updated?

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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?

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If you are considering tactical emissions reductions alongside or instead of systemic transformation, you may want to consider the principles produced in the GARM Ad Net Zero Quick Action Guide launched in 2023, and that was based on best practice tactics being used right now by advertisers and agencies. Available for free download from the following link. <https://adnetzero.com/news/garm-and-ad-net-zero-launch-guide-to-sustainable-media-at-cannes>

## Glossary of Terms

Term	Definition/Explanation
<b>Key Sustainability Terms</b>	
<b>Sustainability</b>	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.” <a href="#">The 17 UN Sustainable Development Goals</a> 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.
<b>Scope 1</b>	Covers all direct GHG emissions from sources that are owned or controlled by the company.
<b>Scope 2</b>	Covers indirect GHG emissions from consumption of energy (e.g., electricity, heat, cooling, steam) generated outside of the organizational boundary of the company.
<b>Scope 3</b>	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.
<b>Climate change</b>	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.
<b>Greenhouse Gases (GHG) and CO2e</b>	There are 6 primary greenhouse gases (as defined by the Kyoto Protocol) – all of them critically influenced by human behavior (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.

The Global Media Sustainability Framework

<p><b>Science Based Targets initiative (SBTi)</b></p>	<p>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.</p>
<p><b>International Organization for Standardization (ISO)</b></p>	<p>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.</p>
<p><b>GHG Protocol</b></p>	<p>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.</p>
<p><b>Intergovernmental Panel on Climate Change (IPCC)</b></p>	<p>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.</p>
<p><b>Legislation/Context</b></p>	
<p><b>Corporate Sustainability Reporting Directive (CSRD)</b></p>	<p>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.</p>
<p><b>US Security and Exchange Commission (SEC)</b></p>	<p>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.</p>

Media/Advertising Terms	
<b>Programmatic Advertising</b>	Programmatic advertising uses software, data, and technology to add automation to the media selling and buying process.
<b>Supply Side Platform (SSP)</b>	An SSP is an advertising technology platform that allows publishers to sell their inventory through one single point of contact to the demand side.
<b>Demand Side Platform (DSP)</b>	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.
<b>Adtech (Advertising Technology)</b>	The software and tools that agencies, brands, publishers, and platforms use to target, deliver, and measure their digital advertising campaigns.
<b>Made for Advertising (MFA)</b>	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	
<b>Workflow</b>	Graphical detail of the steps an ad message takes throughout the 3 Phases, including buying, transmission and consumption/display.
<b>Channel Emissions Framework</b>	Table detail of the functional units with a clear definition of the emissions, detailing source of emissions data.
<b>Channel Emissions Formulae</b>	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.

<b>System Boundaries</b>	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.
<b>Functional Operation</b>	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.
<b>Emissions factor</b>	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.
<b>Data levels</b>	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.
<b>Activity-based product level data</b>	Data that directly represents the variables in the formulae (vs using estimates, approximations, proxies, or other types of “hacks”).
<b>Data hack</b>	Secondary method that can be used to calculate acceptable estimates in the absence of data or reasonable data quality.
<b>Material/materiality</b>	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.
<b>Embodied Emissions</b>	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.



The Global Media Sustainability Framework

<b>Tech manipulation</b>	Creation of multiple asset formats or other modification of the creative product for the purpose of distribution.
<b>Framework Steps</b>	
<b>Ad space selection</b>	The process of matching an advertisement opportunity with an appropriate ad placement and selecting the creative content to be displayed to the target audience.
<b>Real-time bidding</b>	<p>Emissions originating from a real-time bidding (RTB) process.</p> <p>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.</p> <p>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.</p> <p>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.</p>
<b>Direct Sale</b>	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.
<b>Targeting</b>	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.
<b>Ad Creative Delivery</b>	Process of storing a creative on the ad server and then sending it to the user device.

The Global Media Sustainability Framework

<b>Ad Creative Storage</b>	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).
<b>Ad Creative Transmission</b>	<p>Emissions originating from the transmission of the Ad Creative assets from data center, over network, to 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 centers and the network infrastructure, as well as the hardware's embodied emissions (manufacturing and end of life emissions).</p> <p>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 center and the user location to determine the carbon intensity of the electricity to apply.</p>
<b>User device load</b>	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).
<b>User device render</b>	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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**Competition compliance policy**

The purpose of the WFA is to represent the interests of advertisers and to act as a forum for legitimate contacts between members of the advertising industry. It is obviously the policy of the WFA that it will not be used by any company to further any anti-competitive or collusive conduct, or 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. The WFA carries out regular checks to make sure that this policy is being strictly adhered to.

As a condition of membership, members of the WFA acknowledge that their membership of the WFA is subject to the competition law rules and they agree to comply fully with those laws. Members agree that they will not use the WFA, 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 or (c) to further any anti-competitive or collusive conduct, or to engage in other activities that could violate any antitrust or competition law, regulation, rule or directives of any country or otherwise.

Please note that the recommendations included in this document are merely meant as suggestions or proposals. They are not binding in any way whatsoever and members are free to depart from them.