GREEN GAMES GUIDE

AN ACTION PLAN FOR THE SECTOR »

ukie GAMES LONDON PLAYING FOR THE PLANET

CONTENTS

ABOUT THE AUTHORS

///

Daniel Wood

Dan Wood is Ukie's Special Projects lead. He was previously COO of the trade body for ten years, where he led the work on many of the big issues faced by the industry, including the successful original bid to the GLA to create the London Games Festival, the introduction of the video games tax relief and most recently the launch of the industry-wide #RaiseTheGame Diversity Pledge. He is currently leading Ukie's work on sustainability and working with the sector on its approach to tackling climate change through Ukie's Sustainability Working Group.

Benoît Ruiz

Benoît is the innovations expert and consultant for the Interreg Europe funded Green Screen programme led by Film London. He is also an advisor to the CNC, the French institution that supports the games, animation, XR, cinema and audiovisual industries. He works across the board on the creative industries' environmental physical & digital impacts to advise them an economically viable range of GHG emissions mitigation solutions. Benoît regularly collaborates with French networks, European projects, Universities (Paris-Saclay , Montpellier, KU Leuven) and Film/Games London. He is also the co-founder of the environmental engineering firm specialized in the creative industries: Workflowers.net

INTRODUCTION

The damage being done to the planet as a result of human activity is beyond doubt. Like every other sector, the games industry has its role to play in addressing the crisis.

The games sector has the potential to make a significant impact on both how climate change is perceived by the global games playing community and in how we tackle it, individually as businesses and collectively as a sector.

However, as a games business it can be hard to know where to start, so we've produced this short Green Games Guide to:

• Help create a better understanding of the impact that the sector has on the environment

• Help companies think about ways that they can improve their approach to sustainability and reduce their emissions

• Start talking about wider collective efforts we could make as a sector

We want to encourage individual games businesses to look at their operations and reduce their carbon emissions and we've suggested areas where they can start thinking about how best to do this, both in areas that they directly control (such as their offices) and those that they indirectly impact (such as the energy use of their games being played).

We also encourage the sector to think about how to use its huge outreach to inspire players to think about how they interact with the environment and we provide examples of how games businesses are already taking action to inspire others.

There is also the need to think about environmental impact collectively, so you can read more about the UN's Playing For The Planet initiative that lots of games businesses have already signed up to, pledging to make a difference across various initiatives.

This is a long journey and we encourage the sector to think about how we can further collaborate on data collection and the other shared goals and targets that we might shape to bring our impact on the planet down. We've made some suggestions for how we can start shaping this more collective action too.

So, we hope this guide is a useful starting point for games businesses to engage with the discussions around climate change and crucially to start to undertake and inspire the action required to create a more sustainable world.

*"THE GAMES INDUSTRY, WITH
ITS BOUNDLESS CREATIVITY, IS
PARTICULARLY WELL-EQUIPPED TO
START COLLECTIVELY MAKING A
DIFFERENCE"*

FOREWORD

DR JO TWIST OBE, CEO UKIE

The impact of climate change affects us all, as individuals and as part of the games industry that we work in. The scale of it can seem bewildering, the consequences dire and challenges daunting but there is of course a chance for all of us to make the changes needed to halt global warming and the damage being done by climate change.

The games industry, with its boundless creativity, its constantly evolving interaction with technology and its ability to reach and inspire a global audience of billions is particularly well-equipped to start collectively making a difference.

So, we wanted this Green Games Guide to help games businesses to understand how they fit into the bigger picture, to think about how the games that they make and sell can be more environmentally friendly, and to inspire them to think about how their games can help to inspire players to make a difference too.

Whilst this Green Games Guide is just the start of the journey for some in the sector, we need to move urgently if we are to make a difference. We want to inspire and facilitate discussion and shape industry-wide best practice that can be the basis for agreeing industry wide targets that all games businesses can get behind.

There is a need for urgency. We're already seeing evidence of the impact of global warming in the form of increased ice sheet melt or forest fires, and the UN[*] and the wider science community are clearly saying that 2030 is now a key date by which the planet must have had a significant reduction in CO_2 output. Ukie is committing to going carbon net zero, by reducing our carbon emissions and offsetting what we can't cut or avoid, and we want to help the wider industry think about how they can do this by 2030 too

Our commitment to changing how we make, sell and provide ways for people to play games is vital but we also have the opportunity to influence the ways that billions of games players around the world view the environment and the impact that they have on it. There are already some amazing examples of how UK games businesses have done this and hope that the examples we give in this guide can help other games businesses to think about how they can do this too.

The goals above are key elements of the UN's Playing For The Planet Alliance and that's why we're joining them as Associate members as a sign of our commitment to change and as another way to start discussions on a wider global level to collectively making a difference – you can read more about Playing for the Planet below.
www.ukie.org.uk

[*] https://www.unep.org/emissions-gap-report-2020

*"WHEN SO MUCH OF THE
ENVIRONMENTAL IMPACT OF OUR
INDUSTRY OCCURS DOWNSTREAM,
IT'S EASY TO THINK WE DON'T
NEED TO ACT"*

FOREWORD

MICHAEL FRENCH, HEAD OF GAMES, GAMES LONDON

The launch of the Green Games Guide is a milestone for London and UK games developers.

But this is not a simple box ticking exercise, like a sometimes-neglected recycling bin in the corner of you office. Publishing this document is designed to start a conversation, beginning a journey for businesses of every size and type.

As you read on you'll see that everyone has a part to play, although we know for many it's easy to think the 'the environment' is someone else's problem. When Games London started canv sassing businesses about their knowledge and experience of sustainability in the games industry it was clear that awareness was low. Studio leaders who had amassed some insight into the topic confessed that, ironically for a sector that places its users at the heart of the action, they did not feel empowered about this issue. Others simply didn't know where to start. Many felt uninformed or unconnected to the issue.

So to remedy that this guide is packed with information and advice, and confident case studies from the studios already making a difference. It spells out the direct connection games have with the environment and puts into perspective the progress we've already made as a sector. Some of it surprising, some of it reassuring. No, I didn't realise until recently that the major format-holders had been collaborating voluntarily to lower the energy consumption of their devices (*page 15*). Nor did I anticipate that games playing and all its many devices is actually a relatively low-carbon when compared to other leisure activities (*page 9*).

But that's not to say there is nothing to address or that the matter is being handled by the bigger companies. There's a role for SMEs to play. There's a role for individuals to play. For instance: We're quite explicit in explaining that mobilising the many people our sector's impressively vast audience can create real change (page 16), so just imagine what a mobilised industry could do. That's something we all need to be reminded of. When so much of the environmental impact of our industry occurs downstream, it's easy to think we don't need to act or that our efforts have minimal consequence. That isn't true: considering our environmental impact, acting on the data and changing our ways is a job for everyone.

Interactive entertainment is one of the most innovative sectors in the world with one of the most engaged audiences. It also has one of the most engaged professional sectors. Let's use all that to our advantage and make a swift and positive contribution to the planet.

www.games.london

PLAYING FOR THE PLANET

Sam Barratt, Chief of Education, Youth and Advocacy at
UNEP & Co-Founder of the Playing For The Planet Alliance

The Playing For The Planet Alliance is the first of its kind. It was an idea that came together in discussions between UNEP, GRID-Arendal and Playmob in 2019, that called on a group of video games companies who have made voluntary, specific, time-based and increasingly ambitious commitments for both people and planet.

SIGNING UP TO TAKE ACTION
In joining the Alliance, members are asked to make specific and measurable commitments ranging from integrating green activations in games, reducing their emissions and supporting the global environmental agenda through restoration and conservation of forests and oceans.

AND WE'RE ALREADY MAKING A DIFFERENCE
The Playing For The Planet Alliance's first 12 months led to 29 companies signing up on a shared mission to harness the power of this sector, to explore the power of gameplay and to begin to rewire the industry away from carbon.

Two-thirds of Alliance members have already committed to decarbonize their platforms. With new tools, partnerships, and a major climate summit looming in Glasgow this year, this will only grow,

"WE WANT TO PROVIDE COLLECTIVE ACTION AND MORE INSIGHT TO HELP THE GAMES SECTOR PLAY A LEADING ROLE IN THE URGENT FIGHT AGAINST CLIMATE CHANGE."

along with commitments to restoring and protecting the forests of the world.

The 2020 Green Game Jam, led by Space Ape and Sybo, was a great big petri-dish for exploring how to leverage gameplay for the environmental agenda. Not only has it reached more than 100

million people but it has also led to the planting of thousands of trees, raised funds for wildlife conservation, and secured commitments from players to change the way they light their homes.

We have all the right tools close to hand: urgency, creativity and inspiration pour out of the video games industry. In 2021 we intend to show how we can deploy all of these in harmony so that together we can support the industry to play for the planet. To our Alliance members, thank you for all your work and efforts in the first year of this initiative. And to everyone else in the industry, come and join our mission – the door is wide open.

We have bigger plans for 2021, to grow the Playing For The Planet Alliance, to provide collective action around our theme of restoration and to provide more insight and research to help the games sector play a leading role in the urgent fight against climate change.

We'd love you to join us.

Learn more at **playing4theplanet.org** and contact **siiri.maekelae@un.org** to sign up.

THE GLOBAL CLIMATE CRISIS

The environment is a huge, complex system and it's difficult to quantify the scale of the challenge, identify targets and unpick jargon. Here's some key information about the climate crisis

GLOBAL WARMING

Unless you've hibernated for two decades, you will have heard of global warming. It is caused by global greenhouse gas (GHG) emissions such as carbon dioxide, methane and nitrous oxides that are by-products of human processes and consumption such as transport and industrial and energy production.

If we don't stop the rise in global temperatures caused by this increase in greenhouse gasses, there will be dramatic and damaging consequences including significant loss of animal and plant life, a disastrous rise in sea levels and huge reduction of crop yields.

However, according to the UN Environment Programme's (UNEP) Emissions Gap Report 2020 (www.unep.org/emissions-gap-report-2020), global GHG emissions continued to grow for the third consecutive year in 2019, reaching a record high of 52.4 Gigatons of CO_2.
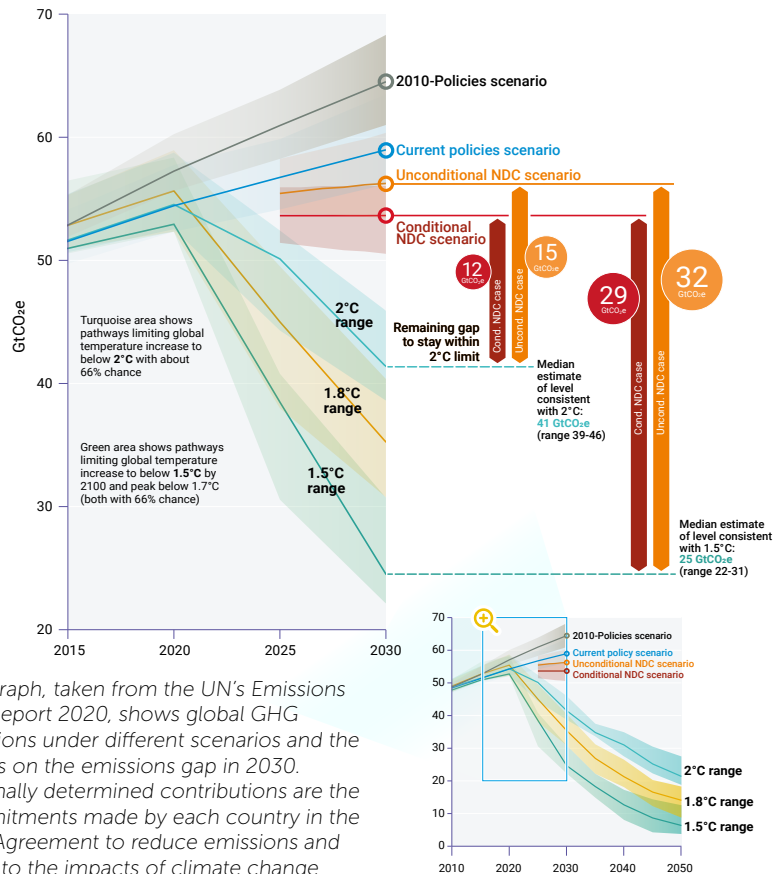
The goal of the Paris Agreement is to **limit global warming** to well below 2, **preferably to 1.5 degrees Celsius**, compared to pre-industrial levels. UNEP's report says that in order to meet a 1.5 degree target, emissions need to be reduced by 55%, by 2030.

If we want to reduce emissions significantly by 2030, we need to abandon fossil fuels and implement technical solutions as well as change our behaviour, in the next decade.

In addition to large emission cuts in the next decade, net CO_2 emissions will on average need to be reduced to zero by 2050 through continued cuts in production of greenhouse gases and the absorption of CO_2 provided by natural carbon sinks such as forests and oceans.

Urgency is required, if the date of reaching net zero emissions is brought forward one decade, to 2040, the chance of limiting warming to 1.5°C is considerably higher. The sooner emissions peak before 2030 and the lower the level at which they do so, the less daunting the challenges will be.

Governments are recognising the need

This graph, taken from the UN's Emissions Gap Report 2020, shows global GHG emissions under different scenarios and the effects on the emissions gap in 2030. Nationally determined contributions are the commitments made by each country in the Paris Agreement to reduce emissions and adapt to the impacts of climate change

for change and new policies and regulations are being introduced to address our impact on the planet.

The UK has pledged to be net zero by 2050 and has recently set an ambitious new emissions target for at least a 68% reduction in greenhouse gas emissions by the end of this decade, compared to 1990 levels. The UK government has also published a ten point plan setting out the approach it will take to build back better, support green jobs, and accelerate the country's path to net zero.

DEFINING CO2 EMISSIONS

One of the ways that CO_2 or Greenhouse gas (GHG) emissions are categorised by businesses is into direct and indirect emissions. These categories, as defined in the GHG Protocol, help business think about where they can make a difference and measure impact.

• **Direct GHG emissions** are emissions

from sources that are owned or controlled by the reporting entity.

• **Indirect GHG emissions** are emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity.

These GHG emissions can be further categorised as being in Scope 1,2 or 3:

■ **Scope 1:** Direct emissions from owned or controlled sources including on-site electricity generation, heating, cooling, owned vehicles

■ **Scope 2:** Indirect emissions e.g. from purchased energy

■ **Scope 3:** All other indirect emissions in a company's value chain that it is indirectly responsible for, e.g.business travel, employee commuting, virtual working, emissions from waste management, or upstream emissions from delivering or resulting from people playing its games
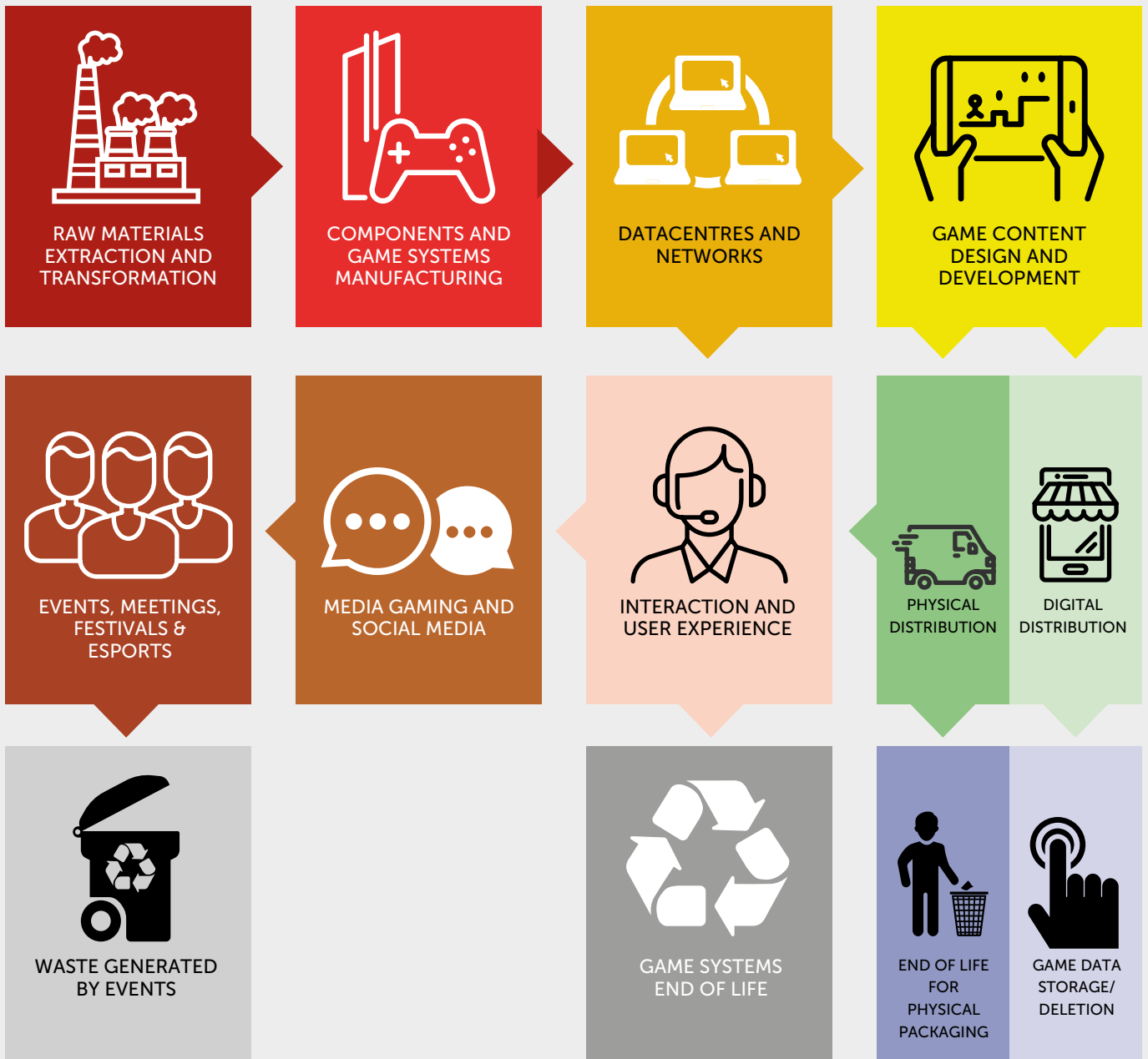
THE GAMES INDUSTRY LIFECYCLE

As one of the fastest moving and most innovative sectors in the world, the games sector has many business models, production techniques, distribution channels, platforms and technologies where sustainability efficiencies and improvements can be implemented to reduce carbon emissions across the world.

These range from the efficiency of the code that is used to make a game, and the impacts of the energy usage of the studios and publishers who make and sell games, through to the distribution of physical products, the energy efficiency of consoles and the energy used by players in accessing and playing games digitally.

Where a company can have the most direct impact on emissions depends on the size and nature of your business.

Nevertheless, every part of the games sector has a role to play and it's important to think about the impact you can have above and below you in the lifecycle chain. For example, a small or medium sized developer who makes their game's code or rendering more efficient can have a significant positive impact on energy usage for consumers further up the chain who are playing their title.

RAW MATERIALS EXTRACTION AND TRANSFORMATION

COMPONENTS AND GAME SYSTEMS MANUFACTURING

DATACENTRES AND NETWORKS

GAME CONTENT DESIGN AND DEVELOPMENT

EVENTS, MEETINGS, FESTIVALS & ESPORTS

MEDIA GAMING AND SOCIAL MEDIA

INTERACTION AND USER EXPERIENCE

PHYSICAL DISTRIBUTION

DIGITAL DISTRIBUTION

WASTE GENERATED BY EVENTS

GAME SYSTEMS END OF LIFE

END OF LIFE FOR PHYSICAL PACKAGING

GAME DATA STORAGE/ DELETION

CASE STUDY: CARBON FOOTPRINT OF PLAYING GAMES

Sony Interactive Entertainment (SIE) has carried out detailed research on the carbon footprint of playing games on PS4 consoles1. The research shows that the carbon footprint of playing games depends on many factors, including which country you live in and which model of console (or other device) you use. Two of the most important factors are the size of the game and how long you play it in total (over its lifetime). SIE analysed these different factors to identify the best ways to game in terms of carbon emissions per hour of gameplay.

DIGITAL VERSUS PHYSICAL: At present (see 'about these estimates', below), SIE estimates that, on average, downloading has the lowest carbon emissions compared to discs and streaming (at 0.05 kgCO2e on average per hour of gameplay using the latest PS4 system. In general, playing games is a low-carbon activity compared to other leisure activities, particularly those that involve transport (such as going to the cinema, estimated at 2.4 kgCO2e/h) Druckman et al. (2012)[2].

LENGTH OF PLAYTIME: How long you play a game for in total (over its lifetime) has an impact on the associated carbon footprint. For example, on average SIE estimates that streaming using the PlayStation Now cloud games service has the lowest carbon emissions for up to 4 to 5 hours of total (lifetime) gameplay, when compared to downloading, or up 20 hours compared to a PlayStation disc.

GAME FILE SIZE: Likewise — game file size is also important. For smaller games, up to 5 GB, SIE estimate that downloading has the lowest overall carbon emissions compared to streaming and discs. For larger games, the study estimates that streaming through PlayStation Now has the lowest carbon emissions if playing for just a few hours overall, while downloading them has the lowest emissions if you want to play for longer. PlayStation Now allows users to try hundreds of games almost instantly, and can reduce the carbon footprint of using a console as it permits consumers to trial games by streaming through the PlayStation Now subscription service with the option to download if playing for longer.

ABOUT THESE ESTIMATES: These estimates include the carbon emissions produced when playing a console, as well as in the manufacturing of consoles and discs, transportation to retailers, delivery or collection from the store, and in the treatment of the products at end of life (e.g. recycling or disposal). They also include the carbon emissions produced from digital and network activities — from the development of games and production of software, to Internet data transmission and the energy consumed by servers used to run PlayStation Network and PlayStation Now. These estimates are based on a study using average European data[1], but are representative for cloud streaming in other regions where PlayStation Now is currently available. Estimates are based on the current PS4 console model (CUH-2216). These estimates will likely change in the future as the performance and efficiency of computing and the Internet improves over time. For example, the energy used to transmit data through the Internet is estimated to have halved every two years since 2000 (Aslan, et al. 2018)[3]. In addition, PlayStation Now is still a relatively new service, and its carbon impact may be subject to change. See this information at: **www.playstation.com/en-gb/corporate/ playstation-and-the-environment/**

[1] Aslan, J (2020) Climate change implications of gaming products and services Doctoral thesis, University of Surrey. **https://epubs.surrey.ac.uk/853729/1/Joshua%20Aslan%20thesis%20final%2012-Feb-20.pdf**
[2] Scope of Druckman et al. (2012) study includes the carbon emissions intensity of transport and embedded emissions from entertainment and culture activities (such as going to the cinema or theatre) and outdoor sports.
[3] Aslan, J., Mayers, K., Koomey, J. and France, C., 2017. Electricity Intensity of Internet Data Transmission: Untangling the Estimates. Journal of Industrial Ecology, 22(4), pp.785-798. **https://onlinelibrary.wiley.com/doi/full/10.1111/jiec.12630**

THE IMPACT OF THE GAMES SECTOR

There are over 2,000 games businesses in the UK, and all of them – developers, publishers, platform holders, retailers, agencies and other support businesses – have a role to play in reducing carbon emissions.

There is not yet a single source of data that can give an accurate picture of the overall sector's carbon footprint but this is a priority for the industry and something that is already starting to be addressed by Playing For The Planet and others.

This includes Sony interactive entertainment who have undertaken detailed research into the carbon footprint of their business (*right*) that shows how different elements along the lifecycle chain need to be considered when calculating the impact that the games sector has.

"THERE ARE OVER 2,000 GAMES BUSINESSES IN THE UK AND ALL OF THEM – DEVELOPERS, PUBLISHERS, PLATFORM HOLDERS, RETAILERS, AGENCIES AND OTHER SUPPORT BUSINESSES – HAVE A ROLE TO PLAY IN REDUCING CARBON EMISSIONS."

ADVICE FOR GAMES BUSINESSES

There are many things that a games company can do to make its business and office(s) operate more sustainably and reduce carbon emissions.

A good place to start is with Playing For The Planet's five step process for games businesses to follow to start reducing their carbon footprints:

1. Define your scope and timeline to reduce your carbon footprint
2. Calculate your emissions
3. Take bold and ambitious action to reduce your carbon footprint
4. When it's impossible to avoid, hit the offset button
5. Ratchet, review and recommend to others

Across the next four pages we've gathered tips and ideas, with help from Playing For The Planet and from other partners, to help businesses to implement the steps above. This list is far from exhaustive but is a good place to begin.

1. SETTING YOUR SCOPE AND TIMELINE

Measuring your carbon footprint is a crucial step towards making your business more sustainable in the long term. However, before you start gathering numbers you should take time to understand what you want to measure:

● **Set your scope:** Before you start measuring think about the scope – for example whether you need to limit your analysis to direct internal company activity, or whether (as many

P4P Alliance member companies currently do) you will also count your supply chain and the energy and indirect emissions people use while playing your game.

● **Set your timeline:** Once you have established the scope and baseline of your emissions, you should set a plan for setting goals and reporting on your performance. Important milestones include setting a date for when you will move to net zero.

"YOU HAVE TO UNDERSTAND MORE ABOUT THE IMPACT YOUR COMPANY HAS IF YOU WANT TO EFFECTIVELY CUT YOUR EMISSIONS"

2. CALCULATING YOUR CARBON FOOTPRINT

You have to understand more about the impact your company has if you want to effectively cut your emissions. It can take time but it will allow you to identify where you should focus your efforts, help establish short and long term targets and will motivate your team to own the activity required to reduce your emissions.

● When you're ready to start measuring pick a start date. Decide when you're measuring from (most people go with January 1 of the last calendar year)

● Capturing data will include energy use in your office, your employees travel and capital purchases (e.g. laptops) and, depending on your scope, could include speaking to your partners and suppliers and gathering player data from your games. As you start you may need to estimate placeholder values and improve

your entries as better data becomes available.

● Data centre and other suppliers - You'll need to talk to the people running your IT and games to understand your cloud or data centre servers and reach out to those providers to get a figure on the energy mix of your electricity.

● Player hours - If you want to understand the energy consumed when playing your games, you will also want to understand the total number of hours that your games were played.

● There are a number tools and advice available to help you do your own carbon audit

　i. The Green House Gas protocol - these are internationally accepted greenhouse gas (GHG) accounting and reporting

standards help create a better understanding of the relative and collective impact that a business has on the environment. Read more at www.ghgprotocol.org

ii. The UK Government has its emissions factors database at www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019

iii. The Carbon Trust has a free to use generic carbon footprint tool for SMEs: https://www.carbontrust.com/resources/sme-carbon-footprint-calculator

iv. UN Climate Change has an electronic equipment carbon footprinting tool at www.2030calculator.com

"WITH SUPPORT FROM PLAYING FOR THE PLANET, WE HAVE GATHERED SOME TIPS & IDEAS TO HELP BUSINESSES OPERATE MORE SUSTAINABLY"

3. TAKE BOLD AND AMBITIOUS ACTION TO REDUCE YOUR CARBON FOOTPRINT

Now you have your carbon footprint, you're in prime position to identify where the biggest impacts are and to start to reduce your emissions. There are many ways you can make your office, home workspaces and your operations more energy efficient, so here are some areas you can consider

Your office energy use
You can make a significant reduction to your energy output (and your office costs) by:

● Switching off equipment when you're not using it. PCs and monitors are the main source of energy usage so make sure you're enabling automatic power saving modes and put printers and other office/server room equipment on timers, so they are not kept on all night.

● Replacing old equipment at the end of its lifespan with more energy-efficient models.

● Turning your office heating down by 1%, this can also reduce heating bills by 8-10%. Set your heating to come on early, so the office is the right temperature when your teams arrive at work. Set air conditioning to come on only when temperatures exceed 24 degrees.

● Make the most of natural light

● Light your office with light emitting diode (LED) bulbs or compact fluorescent lamps (CFLs), rather than tungsten bulbs.

● Look into new zero energy usage technology that can improve your office's ventilation, cooling and shading for windows.

● Set up timers or motion sensing lights – particularly in areas not in constant use such as toilets or meeting rooms.

● Provide staff who have flexible work arrangements with energy efficient hardware that they can use both at home and when in the office.

● Consider whether you can support staff working from home to switch to sustainable energy providers

Switch to a sustainable energy supplier
There are lots of great green energy suppliers who can provide your business with renewable energy tariffs but there are few things to consider.

● 'Green' energy, means generating electricity using things like wave/ hydro, solar or wind power that do not deplete the Earth's resources.

● Make sure you pick the right tariff for your chosen provider. Just because a provider says they provide renewable energy, it doesn't mean that all their tariffs do this.

● If you use a renewable energy supplier this doesn't necessarily mean that the actual energy your office uses will all be green, but you'll still be helping the environment. That's because all suppliers get their energy from the nationwide network which has a range of sources but by opting into a green tariff, your provider will buy the equivalent amount from a renewable source, or it invests the same amount in carbon offset schemes.

● 100% renewable tariffs are available but these can be more expensive than other offerings.

● To help you make a decision you can check if your supplier is certified by the Ofgem energy regulator through its Renewable Energy Guarantees Origin (REGO) scheme (**www.ofgem.gov.uk/ environmental-programmes/rego**).

OFGEM's investigations tool also lets you check the compliance of every sustainable energy supplier (**www. ofgem.gov.uk**).

Review your data storage policies
Data storage needs energy: the more data you store, the higher your emissions.

● Do you need copies or even copies of copies of files, or do you need to send as many email attachments?

● Speak to your server providers to find out how they sustainably consume and store data. Ask three questions of them:

   i. What's the carbon footprint of our cloud computing deployment?

   ii. Are there regions or data centres I can use that are more sustainable than others?

   iii. How can I improve the energy efficiency of my cloud deployment?

● Find savings in your cloud costs; the more you spend with your cloud provider, the higher your emissions are likely to be.

● Can you use the latest compression standard for your storage/ back-up and choose energy efficient storage media?

● Make sure that you have a consolidated and central data storage process, rather than have the same files or assets saved per-team or individual.

● Make sure that your server is actually delivering needed and valuable computing or data storage – you can read an interesting case study here: **www.anthesisgroup.com/report-zombie-and-comatose-servers-redux-jon-taylor-and-jonathan-koomey**

REDUCE

REUSE

REPAIR

RECYCLE

RECOVER

DISPOSE

Reduce and recycle waste

There are some simple principles that you can apply to the items you use and consume in your office that will cut emissions, cut waste and save you money:

● Apply the waste hierarchy (*above*) to your operations. The most important principle you should apply is that you should first reduce or prevent waste before finding ways to reuse or recycle it.

● Replace individual desk bins with communal source-segregated recycling bins or stations – WRAP recommends using one recycling bin for every six staff. (wrap.org.uk/resources/guide/recycling-guidelines)

● Encourage reuse of office assets and supplies such as marketing materials, stationery supplies, cutlery, and packaging like cardboard boxes.

● Install hand dryers in toilets to eliminate the use of paper towels and replace bottled water with water coolers.

● Donate old hardware to other causes to extend its usable lifespan, such as Ukie's Devices for All campaign (www.ukie.org.uk/device-donation-campaign) which encourages games businesses to commit to donating old devices to schools to help close the digital divide.

● Before recycling kitchen or canteen waste, explore opportunities to compost it on-site, subject to licensing requirements.

● There may also be opportunities to work with neighbouring businesses to negotiate better rates for waste collection by bulking up recyclabes for economies of scale.

● Review food offerings where applicable and offer more organic and vegetarian options in place of meat.

Review policies to minimise impact of staff commutes and business travel

Transport and commuting could be a siginificant contributor to your business' carbon footprint. Taking a fresh look at your travel policies can significantly reduce your carbon emissions.

● Commuting – Where possible use public transport or even better encourage walking or cycling to the office through things like cycle ownership schemes.

● When travelling longer distances consider rail over air.

● Offset carbon emissions if you have to fly - many airlines offer this as an option on their payment page.

● When flying, book direct flights.

● When hiring cars, use fuel cell, electric or hybrid models.

● Always think about how you can pack lighter luggage whenever you travel.

● Switch to cargo bike couriers for shifting things around cities and towns.

Make your games as energy efficient as possible

There is increasing evidence that how games are coded, digitally stored and distributed can have an impact on the energy that is used when they are downloaded, streamed or played.. Essentially your games' coding will determine your audience's device's energy consumption, for data storage, processing or network flows. This is an emerging area but there's lots of opportunity for games businesses to lead the thinking in this space. Some areas to think about are:

● Set up a green coding group to assess the impact changes to how you make your games can affect energy consumption

● Reuse your assets from different versions of your games to avoid the having multiple versions stored in different places.

● Adapt your game's specifications to your audience's average set-up (for PC).

● Don't bundle up all your 4K assets as your default install.

● Minimise the amount of processing power going into off-screen objects.

● Avoid having objects updating on every frame i.e., reduce calls on every frame whenever possible.

● Determining the trade-offs between live calculations and value lookups can help to reduce processing time.

● You can optimise the loading of game engine tools to load only what is necessary for the user's needs, for example only artistic tools for an artist.

4. WHEN IT'S IMPOSSIBLE TO AVOID, HIT THE OFFSET BUTTON

When you've looked at how you can directly reduce your business' carbon footprint, you can then offset other emissions through offsetting schemes. There are a huge range of carbon offsetting schemes to choose from, here's some tips for what to look for (and have a look at the Space Ape case study on the next page, too):

● When thinking about what you want to offset, consider the impact your business has in the lifecycle of a game. For example, if you're a developer it's not just your team that contribute, it's also the impact of your game being played and you can also consider offsetting this.

● With so many offsetting schemes out there, make sure you carefully consider the right one for your business.

● Offset projects can benefit the environment in a number of ways such as creating more renewable energy sources or replanting forests or increasing environmentally friendly land use. Many also offer pro-social/poverty benefits which add deeper value. When exploring where to invest, always look for win-wins for people and the planet. It's worth shopping around as there is bound to be one that chimes with the priorities or interests that you and your teams have.

● You also need to make sure that the scheme delivers what they say they will. You should be confident that any scheme you work with offers permanent, quantifiable and verifiable results.

● There are some good accreditation programmes and standards available and you such as verified carbon standard (VCS - www.carbonfootprint. com/vcs.html), Verra (www.verra.org) or Gold Standard (www.goldstandard. org). You should check the scheme that you choose meets these standards.

● You can also select an offset project from the UN carbon offset platform (offset.climateneutralnow.org/ allprojects) which are all certified.

"GET YOUR GAMES COMMUNITY ON BOARD: EXPLORE HOW YOUR AUDIENCE CAN SUPPORT AND ENGAGE WITH YOUR WORK. CONSIDER HOW YOU CAN INTEGRATE ENVIRONMENTAL ASPECTS INTO YOUR GAMES."
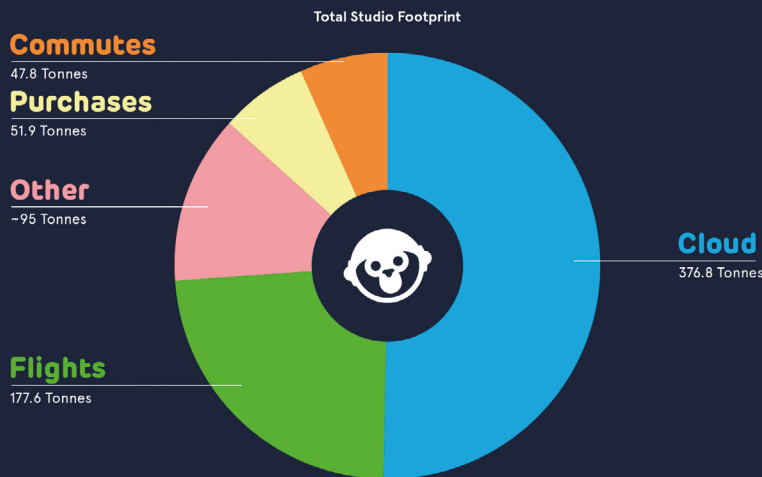
5. RATCHET, REVIEW & RECOMMEND TO OTHERS

There is always more you can do to make your company as green and as sustainable as possible so these additional steps can take you to the next level:

● Ratchet and review each year: The Measure, Reduce, Offset, process is a continuous improvement cycle. Each year you should evaluate and improve your data, revisit your progress against your goals.

● Engage with staff – Staff engagement can not only reduce costs of action, but also increases staff retention among the growing workforce who seek companies with purpose. Achieving ambitious goals together can build skills that will propel your teams in other areas as well.

   a. Have a dedicated session with staff to share ideas, listen to others and shape commitments with an action plan to fulfil them

   b. Let your people volunteer for charitable, eco-friendly projects in their communities.

   c. Help your teams understand and offset their own carbon footprints (or offset it for them!) by looking at incentives to help or support home workers to switch energy supplier or help them to offset their summer holidays flights

● Get your games community on board: Explore how your audience can support and engage with your work. Consider how you can integrate environmental aspects into your games and join a green game jam and riff on ideas for how to incorporate green themes and ideas into your games.

● Make best practice everyone's business – share your learning with others: Once you have taken the step to become carbon neutral, use your voice and influence others in the industry to consider the same by supporting them on this journey.

● Join the collective adventure to learn from others and join the collective efforts to adapt our industry to environmental challenges. You can sign up to **Playing For The Planet** and join **Ukie's Sustainability Working Group** to share thoughts and best practices with other games industry people.

● Share your voice: Post and share your sustainability journey milestones. And follow 5 green heroes on Twitter (or your corporate twitter account) to amplify voices in this space.

● Legacy Emissions: Run a calculation of what it would take to achieve net zero since your company's inception (Microsoft is offsetting all emissions since 1975) and evaluate whether you can meet (or beat!) this ambition!

CASE STUDY

HOW TO MEASURE AND ADDRESS YOUR CARBON FOOTPRINT

London-based Space Ape is one of the games sector's leaders in addressing the impact it has on the environment. The studio now offsets 200% of its carbon footprint, reduced its studio footprint by 25% in 2019 and committed to reduce it by a further 10% in 2020

Total Studio Footprint

- **Commutes** 47.8 Tonnes
- **Purchases** 51.9 Tonnes
- **Other** ~95 Tonnes
- **Flights** 177.6 Tonnes
- **Cloud** 376.8 Tonnes

Written by Nic Walker, Head of Technical Operations, Space Ape

Step 1: Define
Space Ape focused on the four areas it assessed to have the biggest impact on its carbon footprint:
1. **Office energy:** Electricity, gas-heating, water, & waste water
2. **Transport:** Flights, Hotel stays, employee commutes, deliveries, and purchases
3. **Cloud Computing**
4. **Mobile device usage by its players**

Step 2: Measure
Our data came from a mix of sources and some of these categories required creativity to measure. For things like flights, hotel stays and cloud computing, we reached out to the suppliers or managers for the numbers.

One of the best decisions we didn't realise we had made was to use a travel booking company to handle flights and hotel stays across the business. Because it's a common request from customers, they were well primed to be able to help and we received a report detailing our carbon footprint. Hotel stays were a simple matter of finding the right emissions factor for that country from readily available government figures and multiplying by the number of nights stayed.

One area that proved challenging is finding the carbon footprint for our cloud provider. Some providers like Google Cloud are carbon neutral already, but many are not and you may need to rely on estimates or information from other sources to account for your cloud footprint.

Another challenging category to estimate was the carbon footprint of the many purchases we make across the organization. We decided to focus on our tech purchases for the year since they have the highest footprint and found that whilst the data was patchy between vendors, there was ultimately enough data out there to let us make decent footprint estimates.

For player usage, we combined our own internal analytics data which details the number of hours played per player in each country with a table of emissions data for electricity across the world, published by Ecometrica.

For the rest, we surveyed our employees and made some educated data-informed decisions. For example, we know the average electricity use of a monitor and how many monitors our contractors use so we made estimates. Whenever we weren't entirely sure, we erred on the side of caution and overestimated.

We calculated our total carbon emissions in 2018 to be 750 tonnes CO2(e). Our players emitted a further 180 tonnes Because we're offsetting 200% of our footprint, along with the emissions associated with our players playing the games, this adds up to about 1,700 Tonnes CO2(e) that we are offsetting.

Step 3: Offset
Offsetting is a simple idea: you fund projects that remove or prevent greenhouse gas emissions. The challenge is finding high quality offsets that deliver tangible and measurable change.

There are a myriad of projects to offset carbon emissions through. Make sure you look into any you're considering to make sure that they have the science or strategic know-how to back up their claims. Consider too how you can do the most good, and also what resonates with your company.

There are a number of categories of offsetting projects, chiefly:
- Renewable Energy Projects (e.g. solar, wind, hydropower)
- Energy Efficiency Projects (e.g. fuel efficient stoves, energy efficient buildings)
- Land Use and Forestry (e.g. reducing deforestation, reforestation and soil management projects)

A good place to start is to ensure the projects you select are accredited by Verra or Gold Standard. These two organizations publish a great deal of data about the offsets they accredit, including project documentation, methodology and information about how projects are reviewed to ensure they really are achieving the goals they state.

Step 4: Mitigate
Calculating and offsetting emissions is just the first part. The real aim is to create a sustainable future where our lifestyles adapt to find solutions to stay the problem, and more importantly, reverse the effects.

We set a goal to reduce our emissions by 10% in 2020, and again 2021. We're still analysing our 2020 emissions but we think we identified a few ways to achieve these savings in 2021 as we return to our office and to international travel.

We will find efficiencies in our cloud usage to save 2% or more of our footprint. We're also committing to bring our annual flight total down from 1.7 million kms flown to 1.4 million kms, opting instead for conference calls or clustering travel for more efficient use of flying miles. One step we found valuable in 2019 was to work with building management on changing our energy supplier to renewables.

Longer term, for cloud and compute reliant companies like ours to get to totally clean, we will need to partner with businesses that lead the way in sustainability themselves. Our partners being sustainable helps us be sustainable and going forward this will factor into our purchasing decisions.

A small part of mitigation, but one that's important to us, is about adjusting daily attitudes and behaviours. We realised that we can do much more to facilitate proper recycling in our studio, so we're adding clearer labelling and extra bins in each wing of our studio for easy access, as well as adding in an education piece about how to recycle, e.g. washing out containers. We've done an inventory on our weekly grocery shop, switching to products with less or recyclable packaging and we'll be offering our employees keep-cups for their daily coffee runs out of the studio.

IMPROVING PACKAGING

Leading games companies have made significant progress in reducing the waste generated by physical game releases

CASE STUDY

REDUCING THE IMPACT OF PACKAGING – SPORTS INTERACTIVE AND SEGA

In November 2019, Sports Interactive and SEGA released Football Manager 2020, with 100% recyclable packaging.

The two companies wanted to move to a more sustainable and environmentally friendly model of PC game packaging that would reduce the impact on the environment and reduce the amount of pollution caused by sending waste to landfill. The new replacement packaging would also still need to look premium and maintain its shelf appeal while retaining a similar level of security and robustness.

To bring this product to life SEGA firstly consulted with its distribution network across EMEA to gain retail feedback around both customers and their own needs around video game packaging. Having this as a foundation then allowed SEGA to understand potential challenges

before it could look to explore any conceptual design or packaging ideas.

The company then worked with its printer to develop a design which would house both the DVD and manual but still have shelf appeal. So from agreeing and sourcing the 100% recycled material type, SEGA then began the sampling stage. There were multiple considerations for sampling, including board weight, inks, print quality, fulfilment and transit. SEGA also had its replicator ensure it could pack, shrink and transit the new packaging without damage.

The packaging solution that Sports Interactive and SEGA created consists of a box made from 100% recycled and recyclable cardboard, along with a 100% recycled and recyclable manual. All printing uses water and vegetable inks, apart from the disc, which is recyclable

via specialists. The whole package is shrink wrapped in 100% recyclable low-density polyethylene (LDPE). While this approach does come at an extra cost to SEGA Europe, this is *in part* offset by cheaper distribution – lighter packaging means lower fuel costs, and cheaper destruction costs as the package can be fully recycled.

The new packaging was so successful, with estimates for Football Manager 2020 alone suggesting it would save up to 20 tonnes of plastic packaging, that SEGA Europe has since announced that it will switch to fully recyclable packaging for all its physical PC products. Data from the launch has since shown that within six months of the release of FM20 Sports Interactive had already reduced the CO2 emissions of producing and distributing the packaging by 52% compared to FM19.

DEVICE ENERGY EFFICIENCY

Device use is estimated to be the biggest hotspot of energy use and carbon emissions in the lifecycle of games for games consoles and PCs. Although this is highly dependent on the device used and country in which you live: For

countries with low carbon intensity electricity supplies, for example, device use may have a lower carbon impact than other stages of the video games lifecycle.

But extra performance and processing

power does not necessarily mean ever increasing energy usage. Over the past seven years, for example, console manufacturers have made substantial improvements to the energy efficiency of games consoles – see below.

CASE STUDY

IMPROVING THE ENERGY EFFICIENCY OF CONSOLES

In 2015, the Games Consoles Voluntary Agreement (VA) was recognised by the European Commission. The VA aims to continuously review and improve the energy and resource efficiency of games consoles. Sony Interactive Entertainment, Microsoft, and Nintendo are the three Signatories of the VA, which sets out requirements including:

1. Minimum time limits for automatic power down (4 hours for media play, 1 hour for playing video games and other functions).

2. Maximum power caps for media and navigation modes.

3. Requirement for console manufacturers to publish the power consumptions of their console.

4. Commitment to provide out-of-warranty repair service and provide users information to help maintain their consoles.

5. Commitments to improve the recyclability of consoles

The VA has been a very effective driver of energy efficiency. Over the lifetime of PS4 and Xbox One consoles, energy efficiency improvements resulted in power consumption reductions of up to 50% for some modes between the first models and current models. It is estimated that the VA will result in avoided electricity consumption of up to 48 TWh over the lifetime of PS4 and Xbox One consoles (equivalent to the annual electricity production of Portugal in 2016 and significantly higher than the Commission's original target of 1 TWh/yr by 2020). The VA is reviewed every two years to ensure continuous improvement, or when new consoles are launched to ensure new technology is included in the commitments.

Energy efficiency is considered right from the design stage of consoles, and

the VA continues to be an effective driver of efficiency. For the latest generation of 8K capable consoles, released at the end of 2020, the console manufacturers expect lifetime energy savings to reach 46 TWh when considering further efficiency improvements made compared to the previous generation.

Furthermore, the new consoles will have the same power caps as the previous generation, for some modes, power caps will even be lower. This is the first time the industry has achieved this when launching a new generation of consoles, despite significant increases in performance and functionality compared to the previous generation.

For more information on the Games Console Voluntary Agreement visit:
efficientgaming.eu

INSPIRING GAMES PLAYERS AROUND THE WORLD

One of the most influential ways the games industry can positively affect the environment is through inspiring billions of people around the world to take action

Games are now the single biggest entertainment medium on the planet.

With over 2.5 billion people now regularly playing*, the opportunity for games businesses to inspire huge audiences to consider the environment has never been greater.

Three case studies below show the power to inspire change. The Playing For The Planet Green Game Jam has shown the positive impact that the sector can have and has a target of activating 1bn games players towards climate action.

Meanwhile, work by Ustwo Games and Playmob show that by engaging players directly you can create greater awareness of sustainability issues.

CASE STUDY - USTWO GAMES' ALBA: A WILDLIFE ADVENTURE

Ustwo Games' latest game Alba: A Wildlife Adventure is an exploration game about the importance of standing up for the environment, wildlife, local communities and how small actions can make a big difference.

Whilst the game itself helps inspire players to think about the environment, to support Alba's environmentally conscious message, ustwo games have committed to planting one tree for each copy of the game sold or downloaded, with the goal of planting one million trees.

During the development of Alba: A Wildlife Adventure, Ustwo Games was able to create successful partnerships with experts in the environmental/conservation subject matter, and found that many were very willing to offer their time and expertise in order to help support games companies spread awareness to their players.

Ustwo Games has observed that players are responding very positively to the social impact side of Alba: A Wildlife Adventure, with reviews and social media posts describing that players were left feeling inspired after playing.

The Tree planting initiative is receiving positive press, which helps Alba to reach new audiences.

* https://newzoo.com/insights/trend-reports/newzoo-global-games-market-report-2020-light-version/

CASE STUDY - THE GREEN GAME JAM

Under the leadership of Space Ape and Sybo, the 2020 Green Game Jam was held with 11 of the biggest names in mobile games to find innovative ways to educate and empower players about climate change through games to over 110 million players.

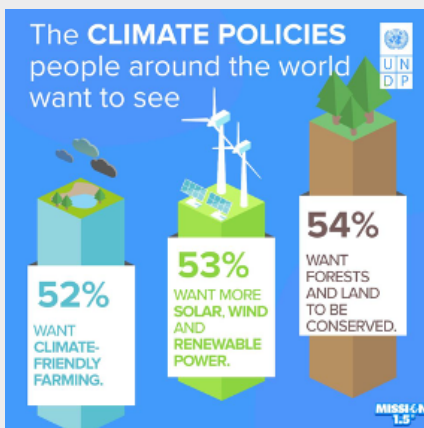Playing For The Planet asked participants to consider:

• What individual commitments can be catalysed to combat climate change through gameplay?

• How can we activate players around the theme of reforestation and restoring nature through gameplay?

• How can we educate people about renewable energy in our games?

• Sandbox Mode: A wild card to allow teams the freedom to explore impactful ideas not captured in the above objectives.

The end result was the integration of some core themes including conservation, renewable energy and reforestation into games that have already reached more than 110 million players around the world.

The Green Games Jam is being run again in 2021. Building on the success of the 2020 Green Game Jam, the aim for 2021 is to reach 1 billion monthly active users with environmental messaging and focus on restoration and conservation of forests and oceans as the core theme.

28 major studios have already agreed to participate in the next Jam, including SIE and Microsoft first party studios, Ubisoft, Niantic, Supercell, Sybo and Rovio. **playing4theplanet. org/the-green-mobile-game-jam/**

CASE STUDY - PLAYMOB MISSION 1.5

The CLIMATE POLICIES people around the world want to see

52% WANT CLIMATE-FRIENDLY FARMING.

53% WANT MORE SOLAR, WIND AND RENEWABLE POWER.

54% WANT FORESTS AND LAND TO BE CONSERVED.

Playmob leverages games to provide insights on what really matters to people, enabling global leaders to make better decisions for people and the planet.

The company worked with the UNDP - the United Nations Development Programme – to create Mission 1.5, a playable advert designed to raise awareness of policy choices and their impact on carbon emissions. The intention was to both teach players about these issues, and let them vote on what they care about most. This resulted in Mission 1.5 being the largest poll ever conducted on attitudes towards climate change.

The result was 1.2 million validated votes from over 50 countries.

The main takeaways are that a third of the global population see climate change as a global emergency.

What people care most about differs depending on region. For example, eight of the 10 countries with the highest emissions from generating electricity show majorities in favour of using more green energy.

The top four policies to tackle climate change were:

1. Conserve forests and land (54%)
2. Use solar, wind and renewable power (53%)
3. Climate friendly farming techniques (52%)
4. Investing more money in green businesses and jobs (50%).

There is also a big correlation between education levels and how much people care about climate change. Across all markets, the more educated the players, the more they care.

The results have drawn in attention from governments globally and media such as Forbes, CNN, BBC and the Guardian and Playmob and UNDP are rolling out a phase 2 covering more countries.

Playmob are also exploring ways to keep the public opinion flowing into the study on a regular basis. The team are working on innovative developments into their platform to build technology that would enable game players to give their views on a regular basis and provide this insight back to global decision makers to make better informed decisions for people and the planet.

They have a call for games studios and advertising networks to get involved to get more global reach and bring more voices and opinions into the study. The method can give games companies a quick, simple and effective way to give players a voice, take action as an individual, take action as a studio and collectively raise the voices of 3 billion people globally.

SUMMARY

A NEED FOR ACTION ACROSS THE INDUSTRY

With the impact of climate change already being felt, there is a clear need for urgent action at a business and collective sector level.

Ukie, Games London and Playing For The Planet want to accelerate how we collectively tackle the challenges ahead, help games companies understand where they can make a difference and plan and shape milestones.

We hope that the guidance in this report can help individual games businesses to take steps to:

a. Measure their own carbon footprint
b. Recognise the urgency and see where they can cut their emission and where they can offset the rest by 2030
c. Think about how green themes and calls to action can be integrated into their games

And from a wider industry perspective, there is work for us to do as a sector to collaborate, develop innovative solutions and create collective ways that we can make a positive difference, some initial ideas for industry collaboration are to:

1. Create and share tools and data resources for measuring the CO2 impact of games businesses of all sizes and the wider sector

2. Activate nationally and collaborate globally to shape an industry-wide commitment to cut emissions by 2030

3. Shape innovative solutions and contributions towards tackling climate change (eg lead the thinking around green coding or shape collective contribution to restoration projects)

4. Agree an impactful call to action to games players to make a significant positive impact on the climate, supporting a common goal

5. To have a presence at this year's COP26 Global Climate Change Summit

As a constantly evolving and fast-growing digital industry, the games sector has a lead role to play in how we tackle climate change and how 2.5bn games players engage positively with the environment.

Many games businesses will be at the beginning of their journeys, but we are confident that by learning from each other and committing to action, collectively and at an individual business level, that this is a challenge that the sector can rise to.