

GDC

March 21-25, 2022
San Francisco, CA

Making Room for Climate Justice

Dr Benjamin Abraham

#GDC22



What I'm talking about today

- What makes a game truly **green**?
- How to make *yours* green!
- What else can we do?

My background

- Started writing in 2016, finished in 2021.
 - Survey and interviews w/ developers
 - CSR reports
 - Measured energy consumption of devices
 - ICP-MS test on PS4 APU
 - Lots and lots of literature reviewed

I argue there is an urgent need for a carbon neutral games industry



PALGRAVE STUDIES IN MEDIA AND ENVIRONMENTAL COMMUNICATION

Digital Games After Climate Change

Benjamin J. Abraham



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Game Industry Carbon Emissions (in tCO₂e)

- **Development**: 3-15m (Abraham 2022)
- **Distribution**: UK PS3 discs 415k (Mayers, et al 2014)
- **Play**:
 - All PS4s in EU 6.7m (lifetime) (Aslan 2020)
 - All gaming in US 24m per annum (Mills et al. 2019)
- **Hardware**: Manufacturing emissions for 5.8bn PS4's to 2020 (Aslan 2020)



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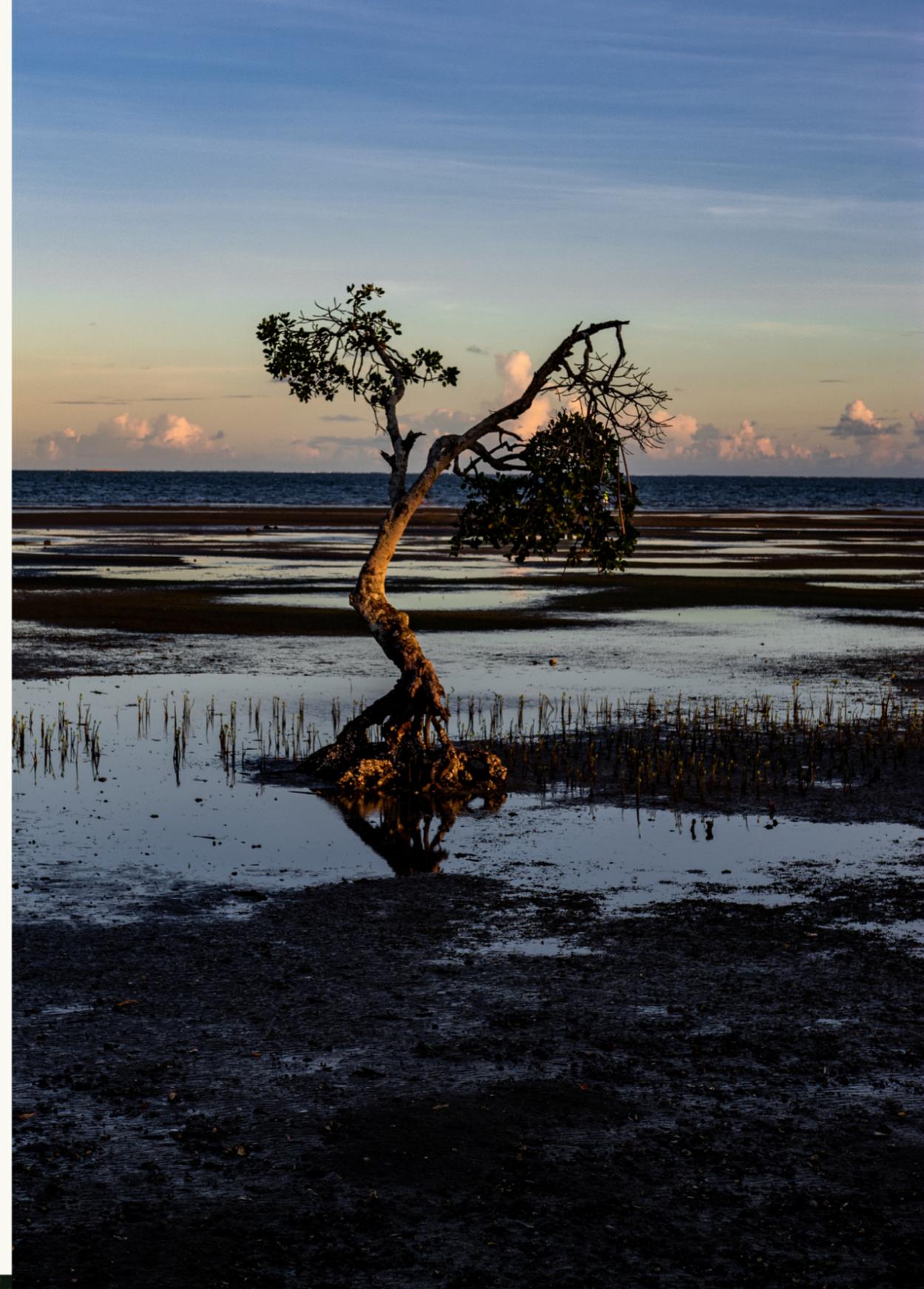
Benjamin J. Abraham



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What this talk is NOT about

- This talk is not about what games you should make (or not make)
- This talk is not about “climate content” – or even a *lack* of climate content
- It’s about what is needed to address the real problem – the essence of climate justice



Just like how tweets are not how we solve racism...



wint

@dril



everybody wants to be the guy to write the tweet that solves racism once and for all because it would look good as hell on a resume

5:51 PM · Jul 26, 2016 · Twitter Web Client

3,062 Retweets **108** Quote Tweets **8,714** Likes

Games are not how we solve climate change



wint

@dril

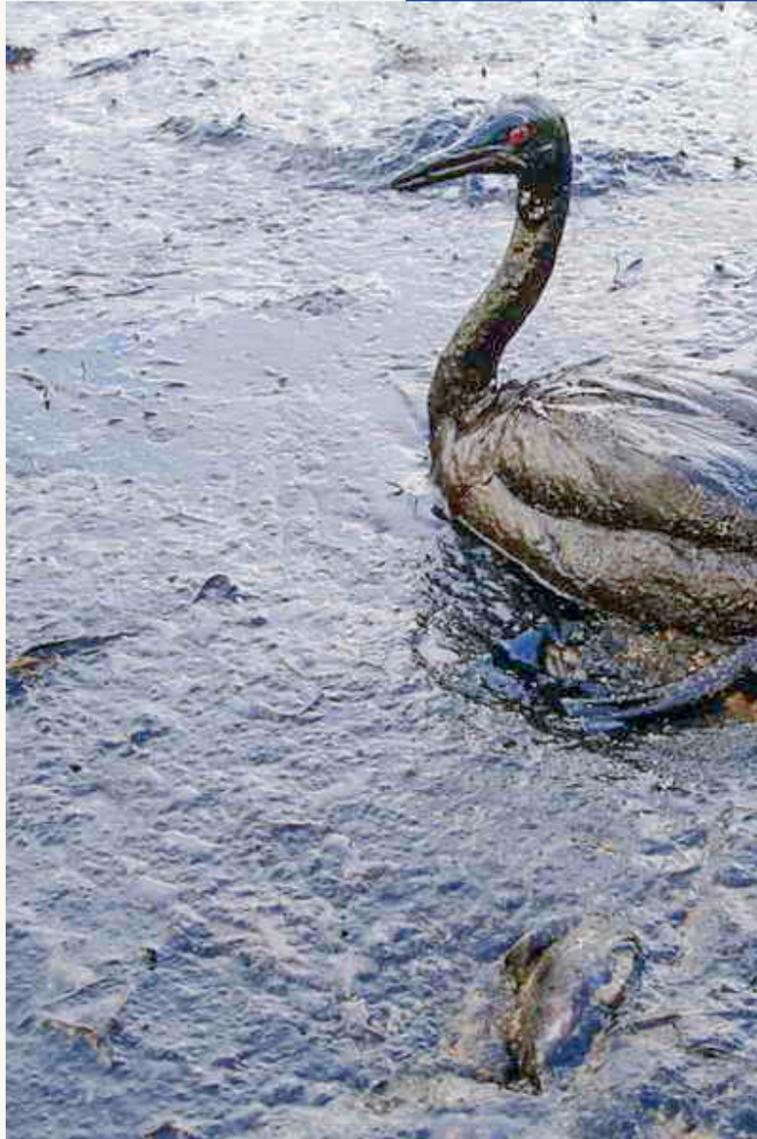


everybody wants to be the guy to **make the game** that solves **climate change** because it would look good as hell on a resume

5:51 PM · Jul 26, 2016 · Twitter Web Client

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We solve climate change by stopping the use of fossil fuels



Green Games Are Fossil Fuel Free

What makes a “green” game has very little to do with what the game is about, including “green themes”, convincing players to care, etc.

100% understandable to want to use your skills (game design, art, programming, etc) to help, but that is not the pathway to decarbonization.

This should be a huge relief

You can make the
games you want and
make them sustainably!



How do we get rid of fossil fuels?

GHG protocol accounting standards define 3 scopes:

- **Scope 1 – FF's you burn (gas, vehicles, etc.)**
- **Scope 2 – FFs someone burns to make your power**
- **Scope 3 – any FFs that someone else burns bc of your product/services (flights, players, etc.)**



Measuring & reducing (Scope 1) emissions

- Do you burn fossil fuels on site?
 - Consider: natural gas, vehicle fleets, generator based UPS(?)
 - Find out the quantity of fuel used (vehicles, can use distance-travelled based calculator)
 - Find emission factors for fuel type and multiply with quantity consumed
- **Solution**: replace them – gas heating w/ heat pumps for e.g.

Measuring & reducing (Scope 2) emissions

- Read utility bill for power consumed (kWh)
- Find emissions factors (EF) for your region (country/state/city) – check govt or utility websites
- Multiply consumption (in kWh) with EF to get your CO₂ totals
- **Solution:** Look for ways to reduce consumption, and (if you have the option) find a 100% renewable power provider

Measuring player emissions (Scope 3)

- Collect **play duration** statistics for your users, alongside data about **which device & where** they are in the world.
- For each location:
 - Multiply duration (in hrs) by device power consumption (watts) for the watt-hours figure
 - Divide by 1000 for the kWh figure, and multiply that with local emissions factor
- **Solution**: For low power devices, offsetting players emissions may be affordable. For console/PC games, prohibitively \$\$\$.
- I also do not *currently* recommend spending the time trying to make a game use less energy – at least, not as a first priority. Other priorities come first, and 100% renewable systems render it moot.

Renewable power grids change everything

- Electrification and renewables is the closest thing to a silver bullet
- 100% renewable power systems change things completely – long term solution (decades).
- Until then will still need variety of actions to help lower emission

Audience sustainability research

Stakeholders are demanding more of businesses

Employees

65%

believe organizations should be responsible for leaving their people “net better off” through work

83%

want the flexibility to be productive anywhere

Consumers

66%

plan to make more sustainable or ethical purchases over the next six months

74%

believe that ethical corporate practices and values are an important reason to choose a brand

Investors

28%

increase in investor signatories in 2020 to the UN’s Principles for Responsible Investment

81%

of sustainable indices outperformed their peer benchmarks in 2020

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Figure 3

Sources: Accenture Future of Work Study; Accenture COVID-19 Consumer Pulse Study; [Principles for Responsible Investment](#); Accenture Global Consumer Pulse Research; Blackrock ¹⁰

Audience sustainability research

Millennials are by far the most likely generation to be willing to pay more for a product that is environmentally sustainable.



75%

of Millennials expressed willingness to pay more for a product that is environmentally sustainable

VS



63% of Gen Z



64% of Gen X



57% of Boomers

GreenPrint – Business of Sustainability Index

Audience sustainability research

“...a whopping 81% of global respondents feel strongly that **companies should help improve the environment. This passion for corporate social responsibility is shared across gender lines and generations. Millennials, Gen Z, and Gen X are the most supportive, but their older counterparts aren’t far behind.”**

– “Global consumers seek companies that care about environmental issues”, Nielsen IQ 2018

Audience sustainability research

61

Key Takeaways

i.e. Green games might not make sales, but *not being green might lose you sales eventually*

01

Sustainably-minded consumers are the same as everyone else, only more so, expressing above-average interest in sticking to budgets and convenience. Sustainable products and services must deliver these essential qualities.

02

Products and services must appeal to sustainably-minded consumers' other distinguishing, 'non-sustainable' characteristics, such as how they identify especially strongly with early adoption of technology, human elements around 'community' and 'localism', well-being through active lifestyles, image and egotism ('I like to stand out from the crowd').

03

Companies must educate consumers about emissions and explain scientific solutions to build understanding and trust.

04

Using a new sustainability lexicon and simple metrics that people can understand on packaging is essential for companies to grow their sustainable consumer base.

05

Consumers want to understand, quantify, compare and contrast their personal impact through purchasing and fulfil their belief that their behaviours can make a positive difference.

Mintel

Carbon neutral gaming audience potential

- Big audience of gamers w/ a social conscience
- Like diversity, equity, representation: climate is a social justice issue
- Gamer pushback against NFTs *huge* cause for optimism
- Cute 'green activations' are not going to cut it

Green games as a USP

- Who's going to be the first to *market and sell* the truly green game?
- A handful exist *already!* Even they could be making more of a big deal of it!
- Indie game makers are perhaps best positioned to take advantage of this.

(as an aside: if anyone's going to make a persuasive climate change game its going to be for a niche market, highly targeted)

Looking further ahead to future ambitions for sustainability

- Surface player's own energy/emissions to them – we are so alienated from our impacts
- Sell games exclusively digitally – the only feasible substitute for polycarbonate discs
- Avoid business flights (scope 3) where possible
- Extend support for older hardware – avoiding embedded emissions in new devices
- Opt-out of the hardware upgrade cycle, computationally intense graphics, focus on *style* over photorealism.
- Apple estimate ~50% of iPhone device emissions come from manufacturing process

Some standards to look up later:

- GHG Protocol (& the ICT specific sector guidance)
- GRI standards
- EPEAT device sustainability standard/registry
- ISO 14001 Environmental Management
- My guide and links to resources at:
<http://iam.benabraham.net/resources>

Summary

- A “green game” is a *carbon neutral* game
- Make it green by addressing scope 1 & 2 (& 3) emissions *urgently*
- Help build a market for green games!

Want to do/know more?

- More detail & analysis in *Digital Games After Climate Change*
- If you would like to do some work together to reduce your game or workplace's impacts, or think you'd benefit from some training, get in touch!
- <http://iam.benabraham.net>
- benjamin.j.abraham@gmail.com
- Get in touch – @afterclimate on twitter

Bibliography

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- Aslan, J. (2020). Climate change implications of gaming products and services. (Doctoral dissertation, University of Surrey).
- Mayers, K., et al. (2014) "The carbon footprint of games distribution." *Journal of Industrial Ecology* 19(3): 402-415.
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