

# A talk that nobody wants to hear

but really should

Csaba Varszegi - 16/09/2022 - WordCamp Netherlands  
[littlebigthings.be](http://littlebigthings.be) - [globalwarning.blog](http://globalwarning.blog) - [csaba.blog](http://csaba.blog)



# The internet has a huge carbon footprint

If the internet was a country, it would have been the 6th largest polluter in 2018.



*“It’s now or never, if we want to limit global warming to 1.5°C. Without immediate and deep emissions reductions across all sectors, it will be impossible.”*

Comment on IPCC’s report 2022 from Jim Skea in [The Guardian](#) (April 4, 2022)



*“The internet is the single biggest thing we’re going to build as a species.*

*If we build it the right way, with the right sources of energy, it could really help power our transition to renewables.*

*If we build it the wrong way, it could actually exacerbate the problem.”*

Gary Cook (Greenpeace)



# I'm Csaba

Web designer at [LittleBigThings](#)

Bio-engineer

Father

WordPress [contributor](#)

I love to ride bikes and play/make music :-)



# A tiny website

10k apart contest

Original website turned into

a WordPress blog [globalwarning.blog](http://globalwarning.blog)

= an easily manageable WP blog with a small footprint

[csaba.blog/global-warning-a-wordpress-blog-with-a-tiny-footprint/](http://csaba.blog/global-warning-a-wordpress-blog-with-a-tiny-footprint/)  
[csaba.blog/site-with-a-tiny-footprint-about-global-warming/](http://csaba.blog/site-with-a-tiny-footprint-about-global-warming/)



# Sustainable web

[www.sustainablewebmanifesto.com](http://www.sustainablewebmanifesto.com)

Sustainable Web Design by Tom Greenwood



# **Sustainable web**

**clean, efficient, open,  
honest, regenerative &  
resilient**

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# Clean?

**Electricity** is needed for servers, networks and devices

- from fossil fuels, nuclear or renewable sources
- around 3-5% of global electricity
- up to 20% in the coming years?

Up to 4% of global carbon emissions (larger than global air travel), and **rising significantly**



# Clean

Use clean (renewable) energy for hosting to save on emission

[www.thegreenwebfoundation.org](http://www.thegreenwebfoundation.org) to check your site and switch to a green host

[www.thegreenwebfoundation.org](http://www.thegreenwebfoundation.org)



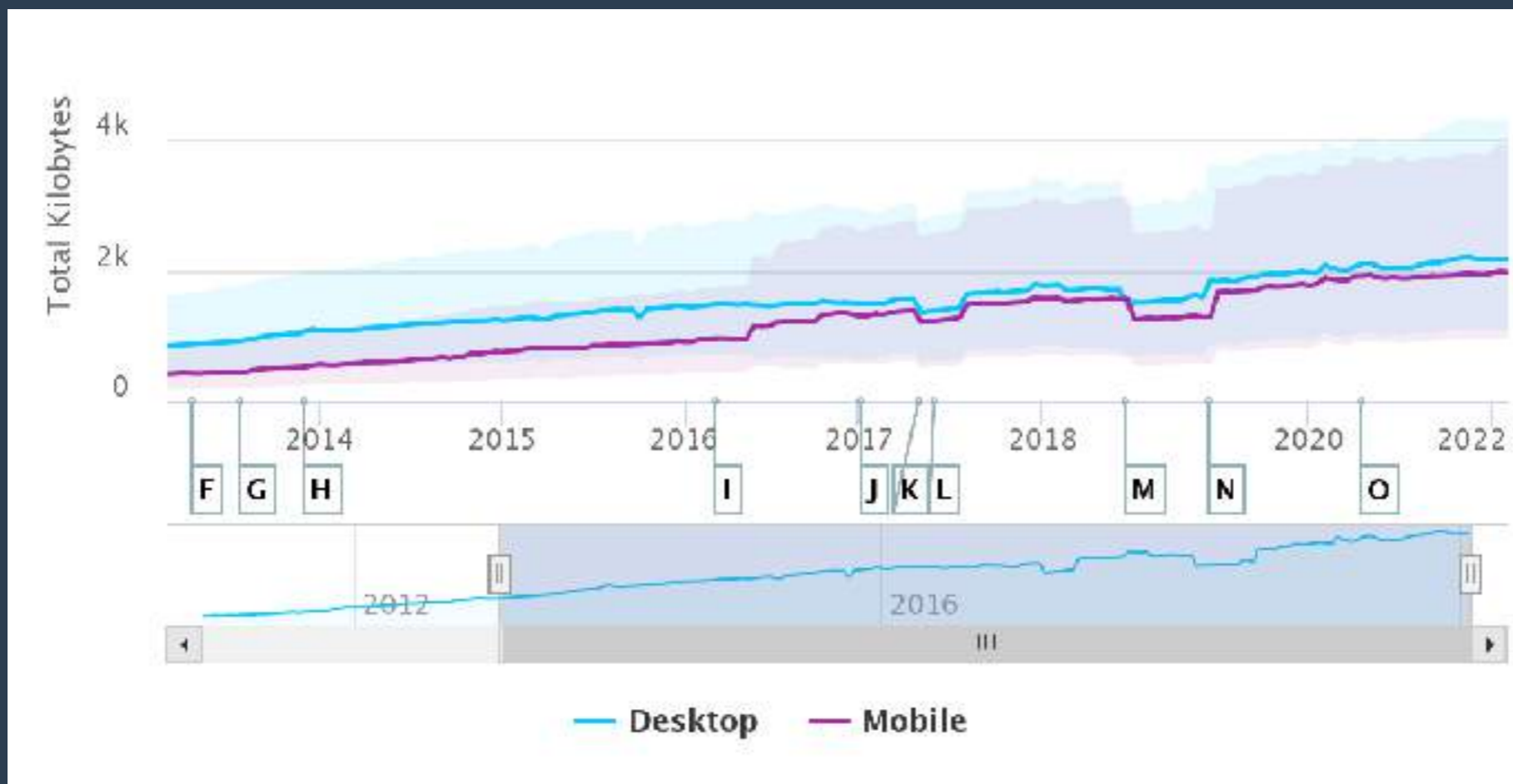
# Sustainable web

clean, **efficient**, open,  
honest, regenerative &  
resilient



# Efficient?

Total kilobytes transferred per page (median)



# Efficient?

**Median web page  
(desktop)**

2,26 MB transfer size  
71 requests,  
incl. ~ **500 kB** JavaScript/JSON

**First contentful paint**

3.7 s (mobile)  
2 s (desktop)

**Time to interactive**

16 s (mobile)  
10 s (desktop)



# Efficient?

How about carbon emissions? From electricity to CO<sub>2</sub> equivalents:

~ 1.8 W to transfer a MB\*

$0.48 \text{ g CO}_2 \text{ eq/W} * 1.8 \text{ W/MB} = 0.86 \text{ g CO}_2 \text{ eq/MB}$

$0.86 \text{ g CO}_2 \text{ eq/MB} * 2.26 \text{ MB} = 1.94 \text{ g CO}_2 \text{ eq (median)}$



Electricity map ([app.electricitymap.org/map](https://app.electricitymap.org/map))

\*used by the Website Carbon Calculator



# Efficient?

Just 1.94 g CO<sub>2</sub> eq? Yes, but there are billions of users and websites.

A small reduction can have a huge impact, so let's be more efficient!

[www.internetlivestats.com](http://www.internetlivestats.com)

<https://dannyvankooten.com/website-carbon-emissions/>





# Efficient

Tool to measure the carbon emission of a web page:

[websitecarbon.com](https://www.websitecarbon.com)

Average measured:

0.5 g CO<sub>2</sub>/page view

Scan and test!





# Efficient


Tool to measure the carbon emission of a web page:  
[websitecarbon.com](https://www.websitecarbon.com)

Carbon results for  
[netherlands.wordcamp.org/2022](https://netherlands.wordcamp.org/2022) Share f t in e

This page was last tested on 14 Sep, 2022.


 Hurrah! This web page is cleaner than **56%** of web pages tested


 Only **0.42g of CO2** is produced every time someone visits this web page.


 Oh no, it looks like this web page uses **bog standard energy**

Carbon results for  
[globalwarning.blog](https://globalwarning.blog) Share f t in e

This page was last tested on 22 Apr, 2022. 161,953.1

 Hurrah! This web page is cleaner than **99%** of web pages tested

 Only **0.01g of CO2** is produced every time someone visits this web page.

 This web page appears to be running on **sustainable energy**



# Efficient

Use [CO2.js](#) from the Green Web Foundation to estimate the carbon emissions of your site

For example, to create a *carbon budget* or inform users about the impact of their activity



# Efficient

Reduce image size: use efficient formats (WebP & AVIF), optimise resolution as size and compress

Less JavaScript (including tracking scripts and scripts of embedded content like video)

Fonts: file format and subsetting

Cache (all?) things or keep it static

Progressive Web Apps



# Efficient

Google uses electricity map to plan heavy operations

Branch Magazine: [branch.climateaction.tech](https://branch.climateaction.tech)



Look for clever ways to optimise for perceived performance!



**#core-performance  
team**



*“The most sustainable feature of a website is the one you don’t implement.”*



# Sustainable web

clean, efficient, **open**,  
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resilient





# Open

Accessible for everyone

Open-source: more robust solutions that are widely usable

Learn from each other

Applications to communicate with APIs

Allow users to view/control their data



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[www.sustainablewebmanifesto.com](http://www.sustainablewebmanifesto.com)



# Honest

Avoid dark patterns and sneaky tricks

Avoid using personal data unnecessarily (alternatives for Google Analytics: [Plausible](#), [Cabin](#), Matomo, or Fathom analytics)

Support honest and good businesses

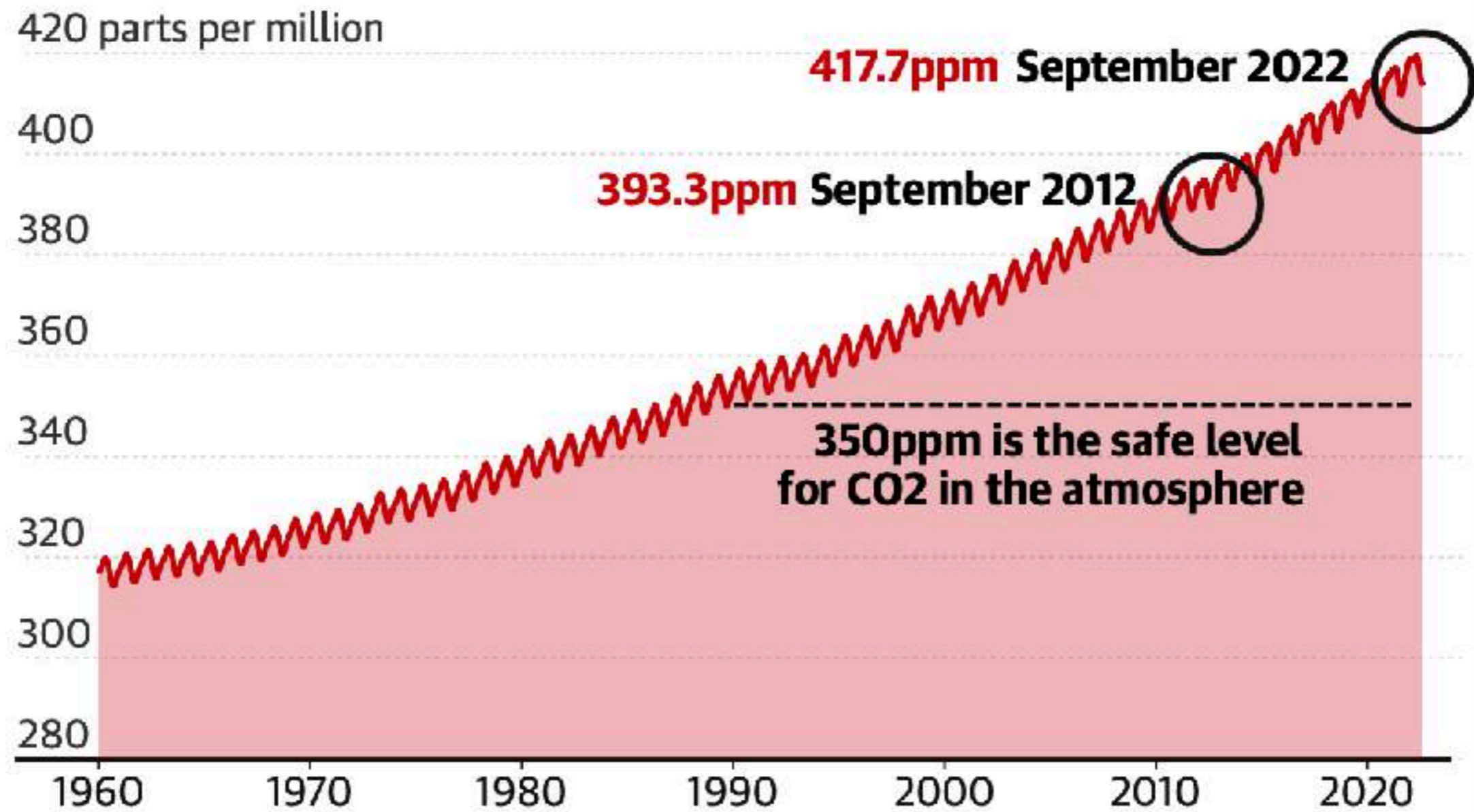
Look at the long-term and always be kind and ethical



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About [IPCC's report 2022](#) in [The Guardian](#) (April 4, 2022)

# Regenerative

Empower people to take meaningful action to restore

Discourage bad habits, encourage good ones

Plant trees ([ecologi.com](https://ecologi.com), [digitalhumani.com](https://digitalhumani.com), ...)



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# Resilient

Keep the web resilient

Keep things secure

Make things robust





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# **Sustainable web**

**be clean, efficient, open,  
honest, regenerative &  
resilient**



# Join the **#sustainability** channel

WordPress Slack



**Thank you!**



# Resources: books

**Sustainable Web Design** - Tom Greenwood

**Designing for Sustainability** - Tim Frick

**Ruined by Design** - Mike Monteiro

**This can't be happening** - George Monbiot

**Material Matters** - Thomas Rau & Sabine Oberhuber

**How are we going to explain this?** - Jelmer Mommers

**Going Offline** - Jeremy Keith

**Resilient Web Design** - Jeremy Keith ([free ebook](#))



# Resources: tools

Sustainable Web Manifesto: [sustainablewebmanifesto.com](https://sustainablewebmanifesto.com)

Website Carbon Calculator: [websitecarbon.com](https://websitecarbon.com)

Sustainable Web Design: [sustainablewebdesign.org](https://sustainablewebdesign.org)

Climate Action Tech: [climateaction.tech](https://climateaction.tech)

Branch Magazine: [branch.climateaction.tech](https://branch.climateaction.tech)

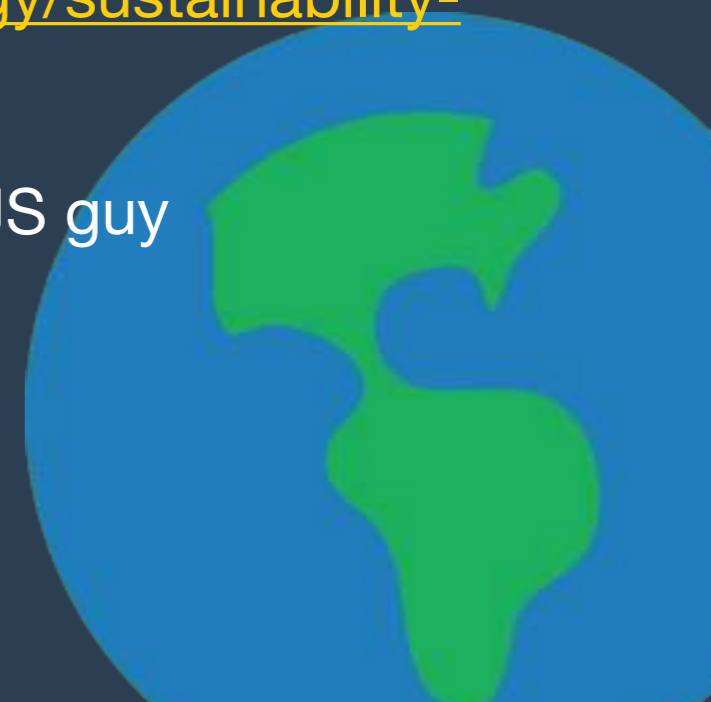
Wholegrain Digital: [wholegraindigital.com/blog/category/sustainable-web/](https://wholegraindigital.com/blog/category/sustainable-web/)

Mighty Bytes: [mightybytes.com/blog/category/business-strategy/sustainability-business-strategy/](https://mightybytes.com/blog/category/business-strategy/sustainability-business-strategy/)

The Lean Web: [leanweb.dev](https://leanweb.dev) from Chris Ferdinandi, the vanilla JS guy

The Sustainable Dev: [the-sustainable.dev](https://the-sustainable.dev)

Global Warning: [globalwarning.blog](https://globalwarning.blog)



# Resources: slides

[csaba.blog/wc-netherlands-2022/](https://csaba.blog/wc-netherlands-2022/)

