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Greening the web:

How can we create zero carbon websites?

Tom Greenwood

@eatwholegrain

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Do websites even produce carbon emissions?

Internet emissions are huge

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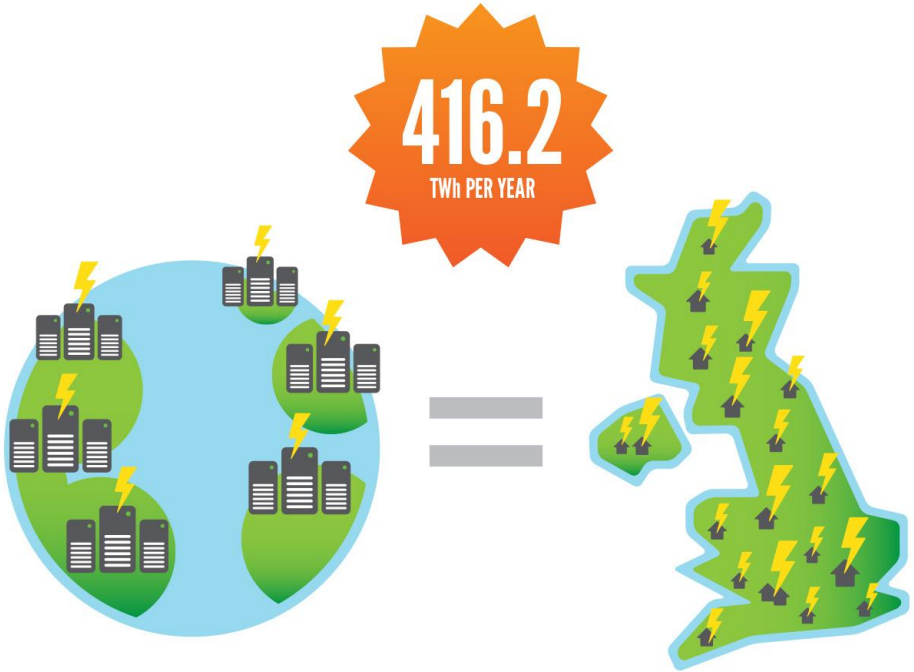

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Data = Energy = CO2

We are using more data

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Page sizes 20x the size they were in 2003

The internet could reach 3.5% global CO2 emissions within 10 years

Digital transformation was believed to drive efficiency, but is now itself a threat to achieving carbon reduction targets

We must reduce emissions fast

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“The year 2020 is crucial.
If CO2 emissions continue to rise beyond that date, the most ambitious mitigation goals will become unachievable.”

Prof. Thomas Stocker - Physics, University of Bern IPCC Co-Chair 2008-2015

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What can you do?

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“You can’t manage what you can’t measure”

Peter Drucker

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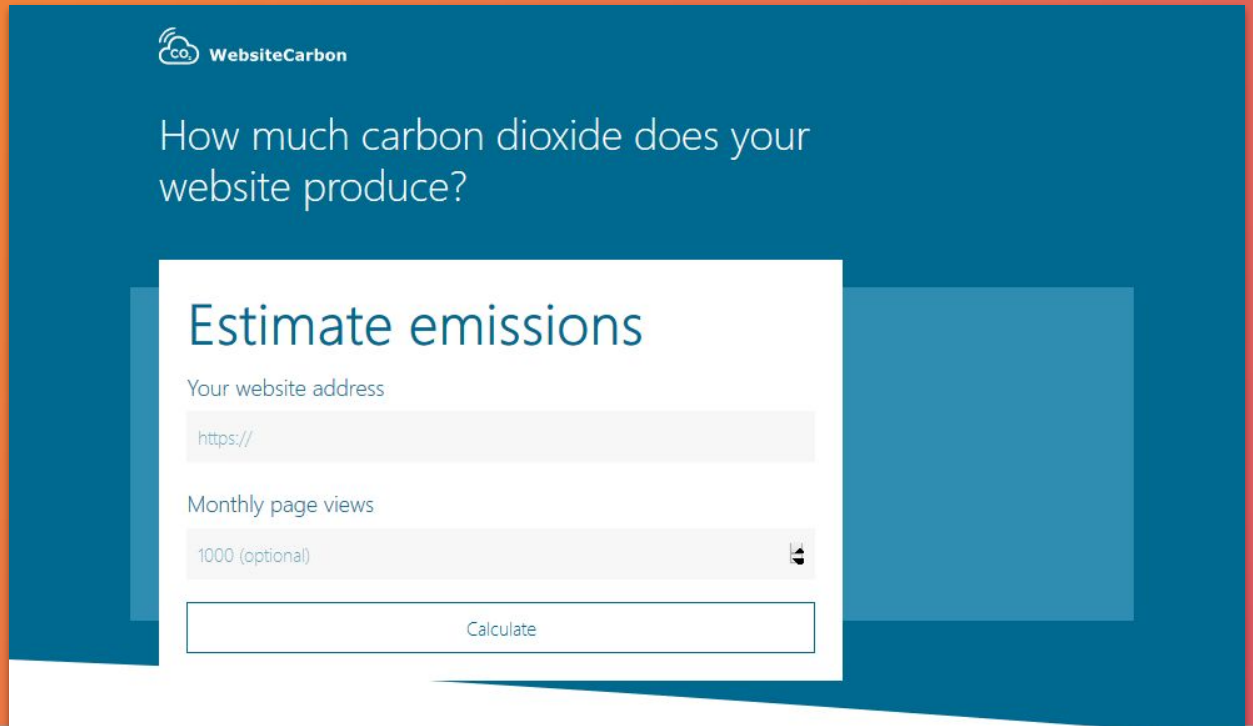
Free carbon calculator at WebsiteCarbon.com



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Average website produces

6.8g CO2

per page view

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The best website tested

0.009g CO2

per page view

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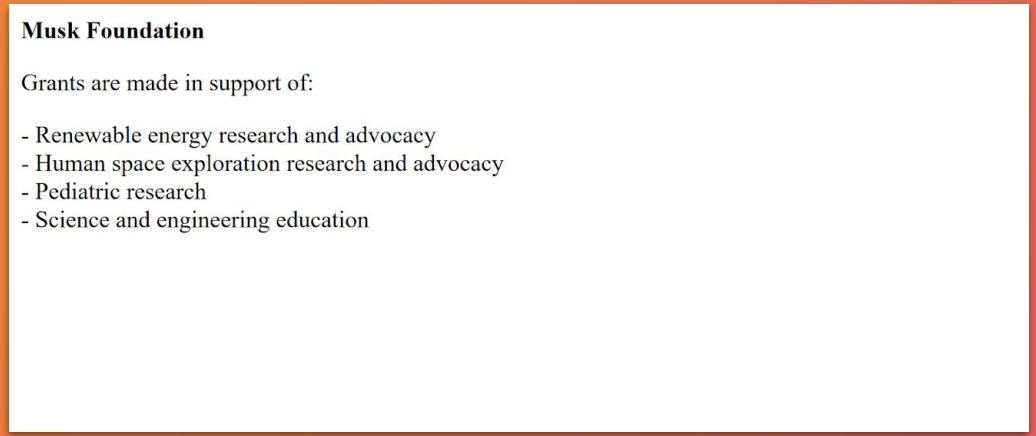
The best website tested



MuskFoundation.org

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Approach 1

Reduce data transfer

How to reduce data transfer

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1. Write efficient code
2. Minimise video and animated gifs (no autoplay)
3. Use vector graphics and CSS effects
4. Compress files, images and videos
5. Minimise custom fonts
6. Reduce tracking and ad scripts
7. If in doubt, leave it out!

Article19.org - CO2 emissions

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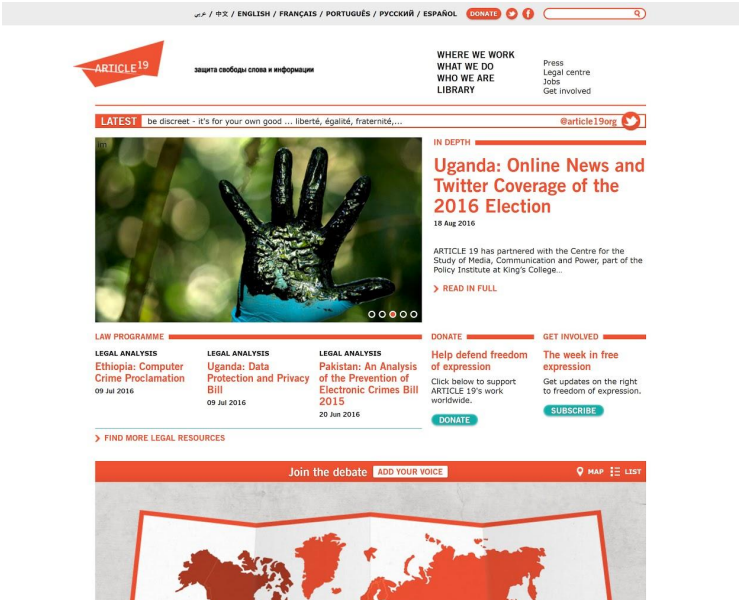
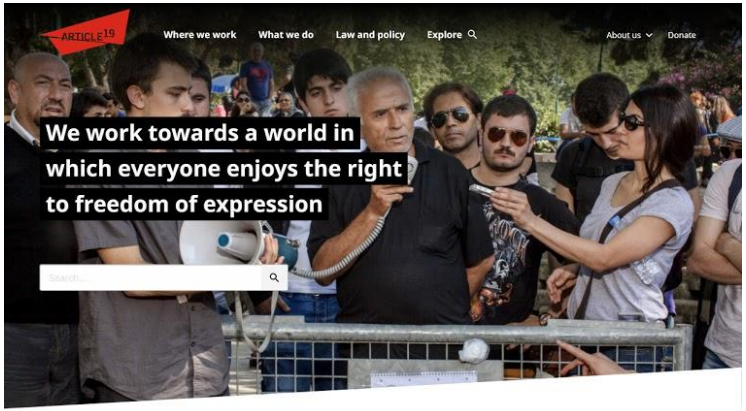
Old = 1.9 grams per page view



New = 0.99 grams per page view



Efficiency improves accessibility

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Low data, high performance websites are easier and cheaper to access:

1. Mobile visitors
2. Low income visitors
3. Visitors in developing countries

1GB data costs over 4% annual income in Kenya

Less traffic = less data

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High bounce rates and poor user experience artificially inflate your monthly page views.

They add no value and frustrate users, so design them out.

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Approach 2

Use cleaner energy

Green hosting companies

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TIMPANI
WORDPRESS PLATFORM

WP engine®

Google Cloud Platform

RAIDBOXES

KINSTA

Find green web hosts at www.thegreenwebfoundation.org

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NetworkRail.co.uk

1 million

page views per month

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108,000kWh

430,000miles

That’s 18 times around the world!

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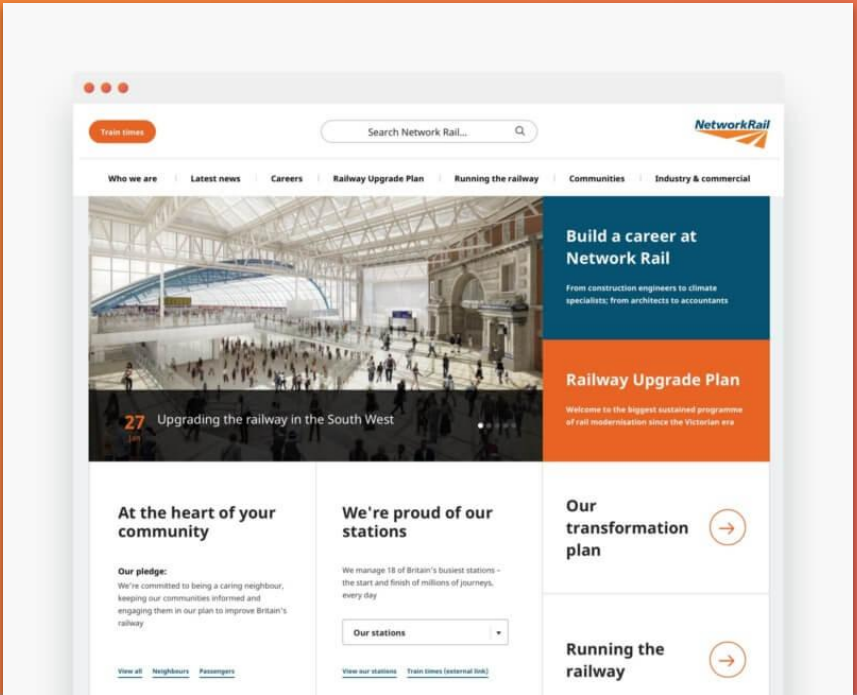
Annual CO2 = 53 tonnes



Railway carriage = 48 tonnes

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Switching hosting to renewable energy saves

24t CO_2 per year

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Summary:

1. **Estimate your emissions** (try WebsiteCarbon.com)
2. **Improve efficiency** of design, dev and UX to reduce data and unwanted page views
3. **Switch to a green host**