

# What WordPress developers can do about climate change 🌍

**Jack Lenox**

WordCamp Norrköping, August 2018





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Your enterprise content platform shouldn't be a drag on  
time, resources, and sanity.

# We free you to **publish.** That's our mission.



Managed WordPress Hosting



Implementation and Support

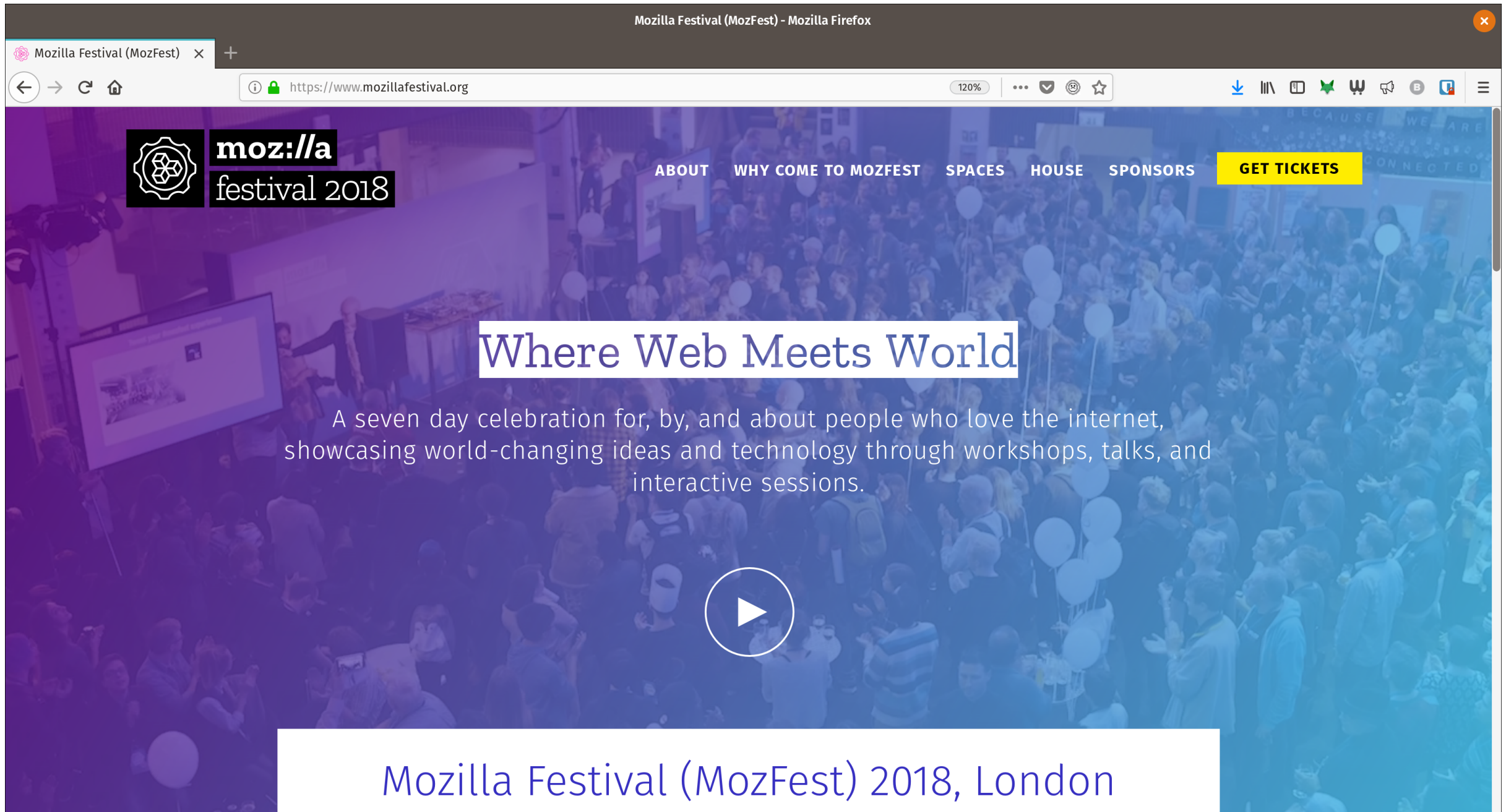


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Environment ► Climate change Wildlife Energy Pollution

Wildfires

# Wildfires rage in Arctic Circle as Sweden calls for help

Sweden worst hit as hot, dry summer sparks unusual number of fires, with at least 11 in the far north

Jonathan Watts

Wed 18 Jul 2018 07.30 BST



14,297



most viewed in US



'Oral sex - and no scissoring!' How the lesbian gaze changed cinema



Blue light from phone screens accelerates blindness, study finds



Jacinda Ardern says New Zealand will ban plastic bags



Melania Trump's parents become citizens through 'chain migration'

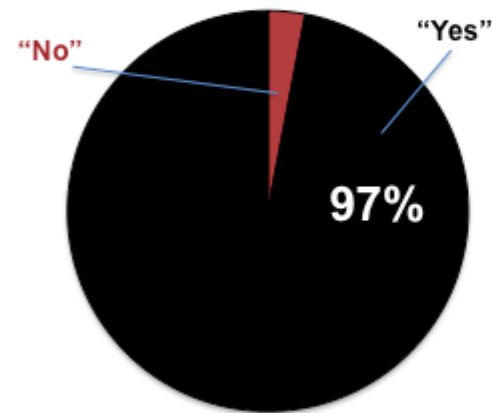


'Mars awaits': Trump supporters to vote on logo for space force



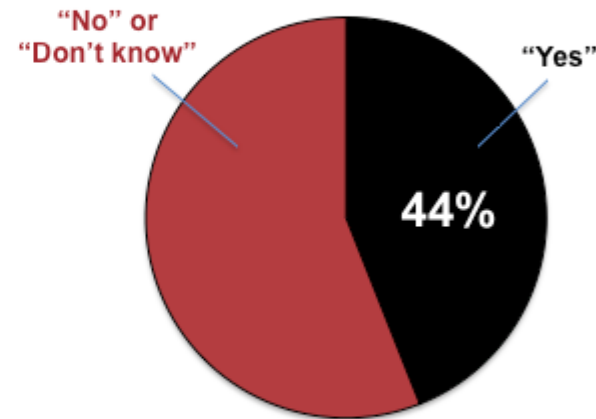
## Is Global Warming Happening and Mostly Human Caused?

Climate Scientists<sup>1</sup> say...



<sup>1</sup>Proportion of peer-reviewed papers that stated a position on the reality of human-caused global warming and said it is happening and human caused (Cook et. al, 2013).

The American Public<sup>2</sup> says...



<sup>2</sup>Question asked of Americans (18+): Assuming global warming is happening, do you think it is caused mostly by human activities; caused mostly by natural changes in the environment; other; none of the above because global warming isn't happening."

Base: Americans 18+ (n=1,013). April, 2014.



George Mason University  
Center for Climate Change Communication



# climate change

we proactively consider climate change in our business decisions

providing strong governance | assessing and managing risk | setting business strategy | policy principles | actions and investments





The Paris Agreement | UNFCCC - Mozilla Firefox

The Paris Agreement | UNFCCC

https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

120%

UNFCCC Sites and platforms

CDM

TT Clear

Climate Action 2020


Adaptation Knowledge Portal

Submission Portal







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The Paris Agreement

The Paris Agreement


The Paris Agreement


# The Paris Agreement


New!


[Progress tracker: Work programme resulting from the relevant requests contained in decision 1/CP.21](#) (version of 3 July)

Paris Agreement: essential elements

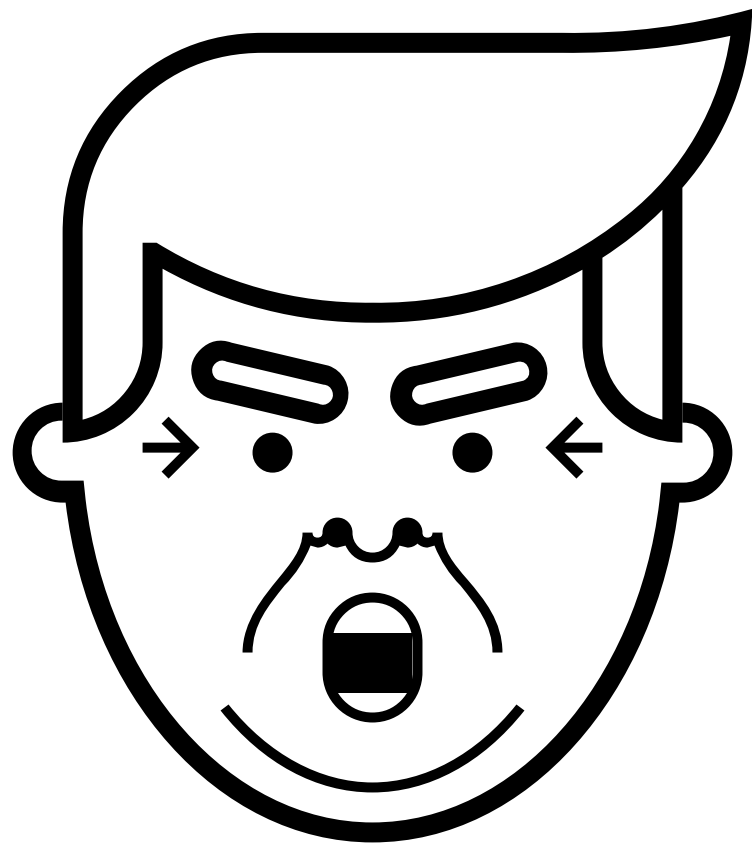
 Arabic

 Chinese

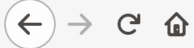
 English

 French









# AMERICA'S PLEDGE

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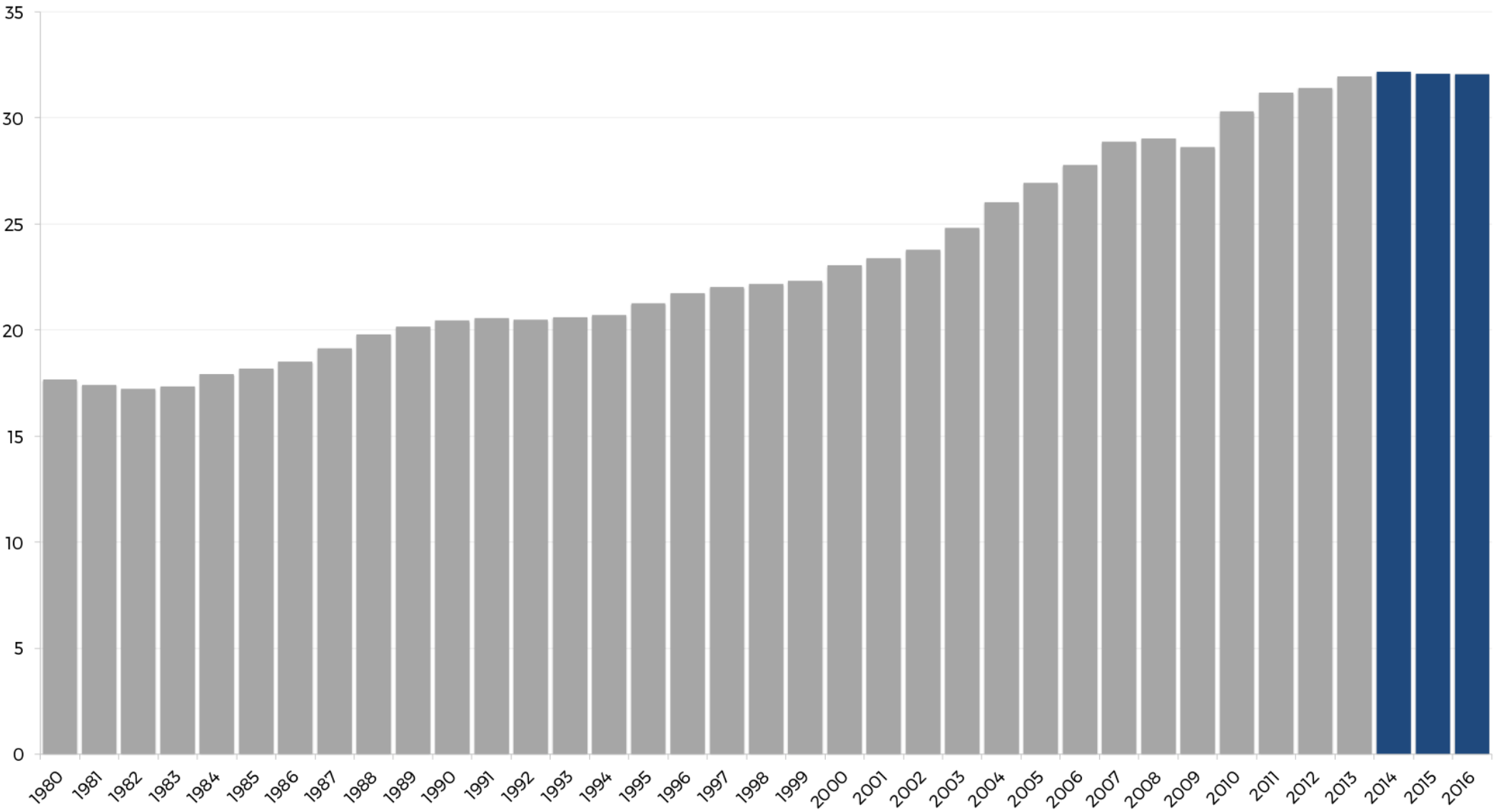
America's local & state leaders are working to shift the power sector to a cleaner future. Windmills in Boston Harbor provide enough energy to power 700 homes annually.

Across America, states, cities, businesses, universities, and citizens are taking action to fight climate change, grow the economy, and protect public health. America's Pledge brings together private and public sector leaders to ensure the United States remains a global leader in reducing emissions and delivers the country's ambitious climate goals of the Paris Agreement.

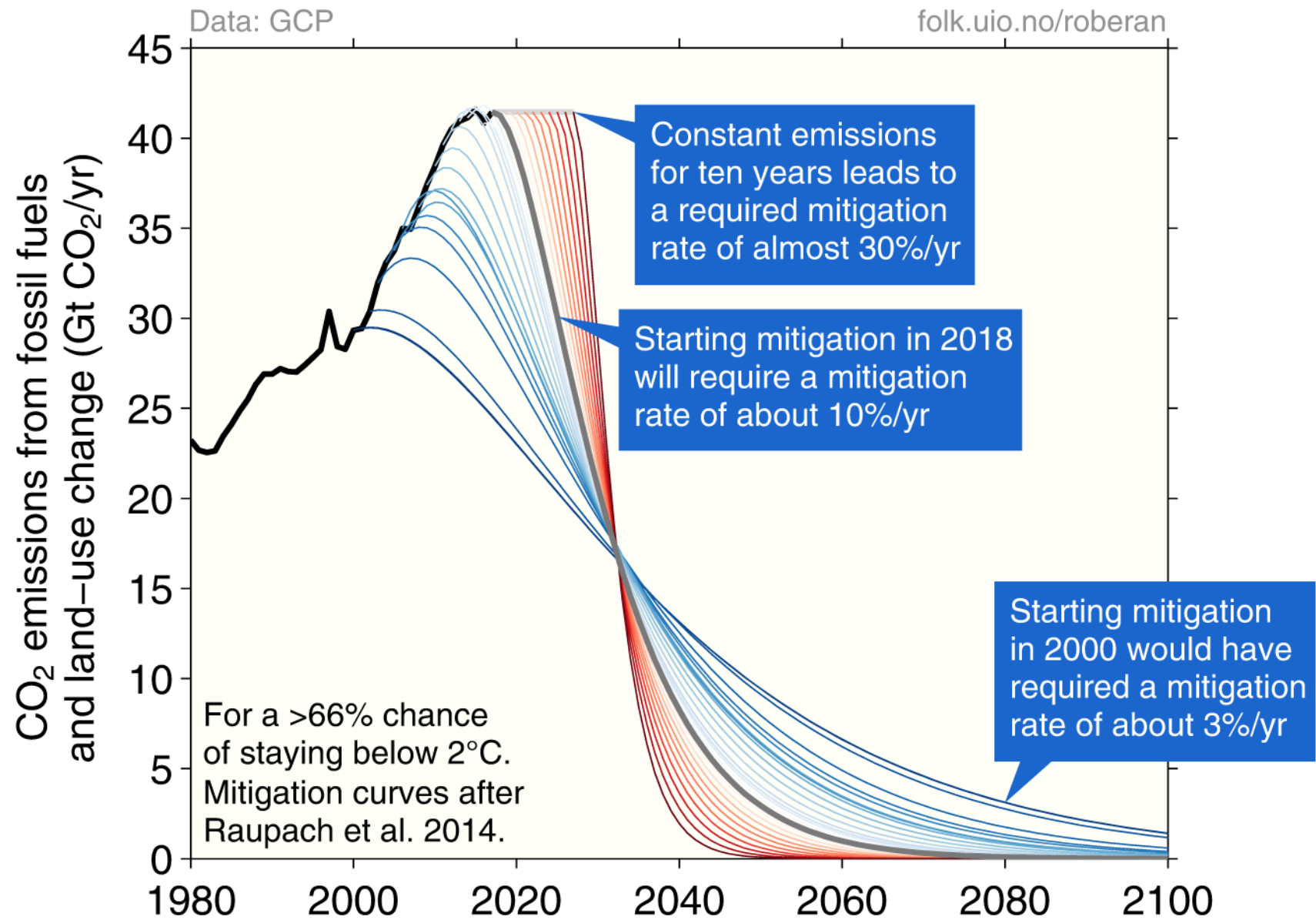


# Global Carbon Dioxide Emissions, 1980-2016

Gigatonnes









## Energy overhaul

	What we should be doing*	What we're actually doing†
Megawatts per day	1,100	151
Megawatts per year	401,500	55,115
Megawatts in fifty years	20,075,000	2,755,750
<b>Years to add 20 Terrawatts</b>	<b>50</b>	<b>363</b>

Sources: Carnegie Institution,  
Science, BP

\*If we had started at this rate in 2000

†Actual average rate of carbon-free  
added per day from 2006-2015



What do you mean? I'm a web developer. The web's  
**green** right? 🤔



**No. Sorry.**



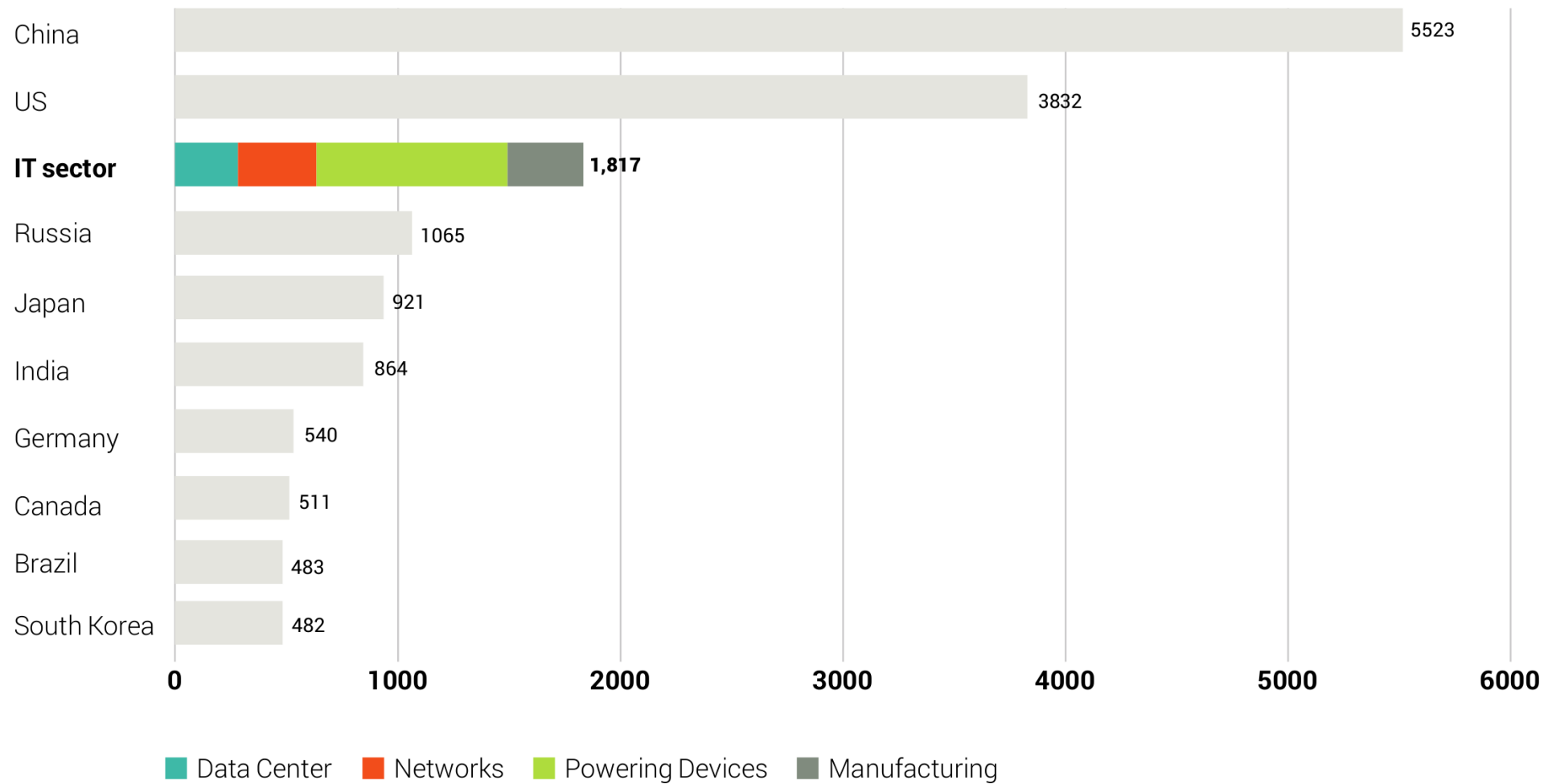
**The Internet uses a *colossal* amount  
of electricity** 



**How much electricity?**

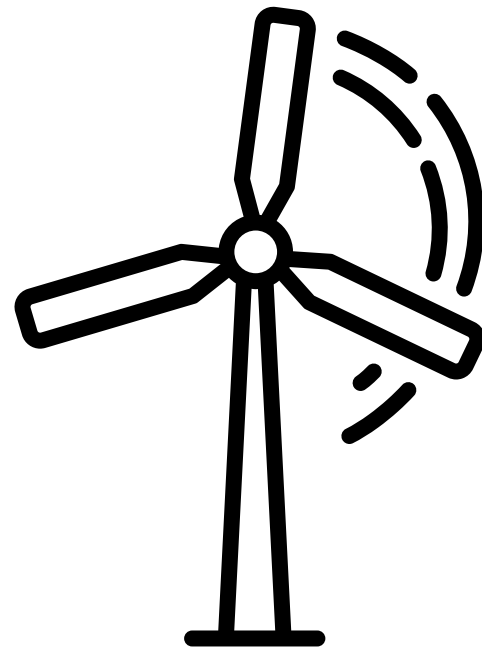


## 2012 Electricity Consumption; Countries Compared to IT Sector in billion kWh



Source: *Emerging Trends in Electricity Consumption for Consumer ICT*, Peter Corcoran and Andres Andrae (2013) and CIA World Factbook. China/Russia/Canada figures are from 2014.





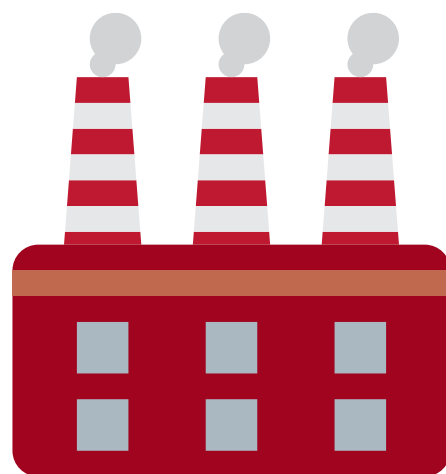






**How little? About 12-15%...**





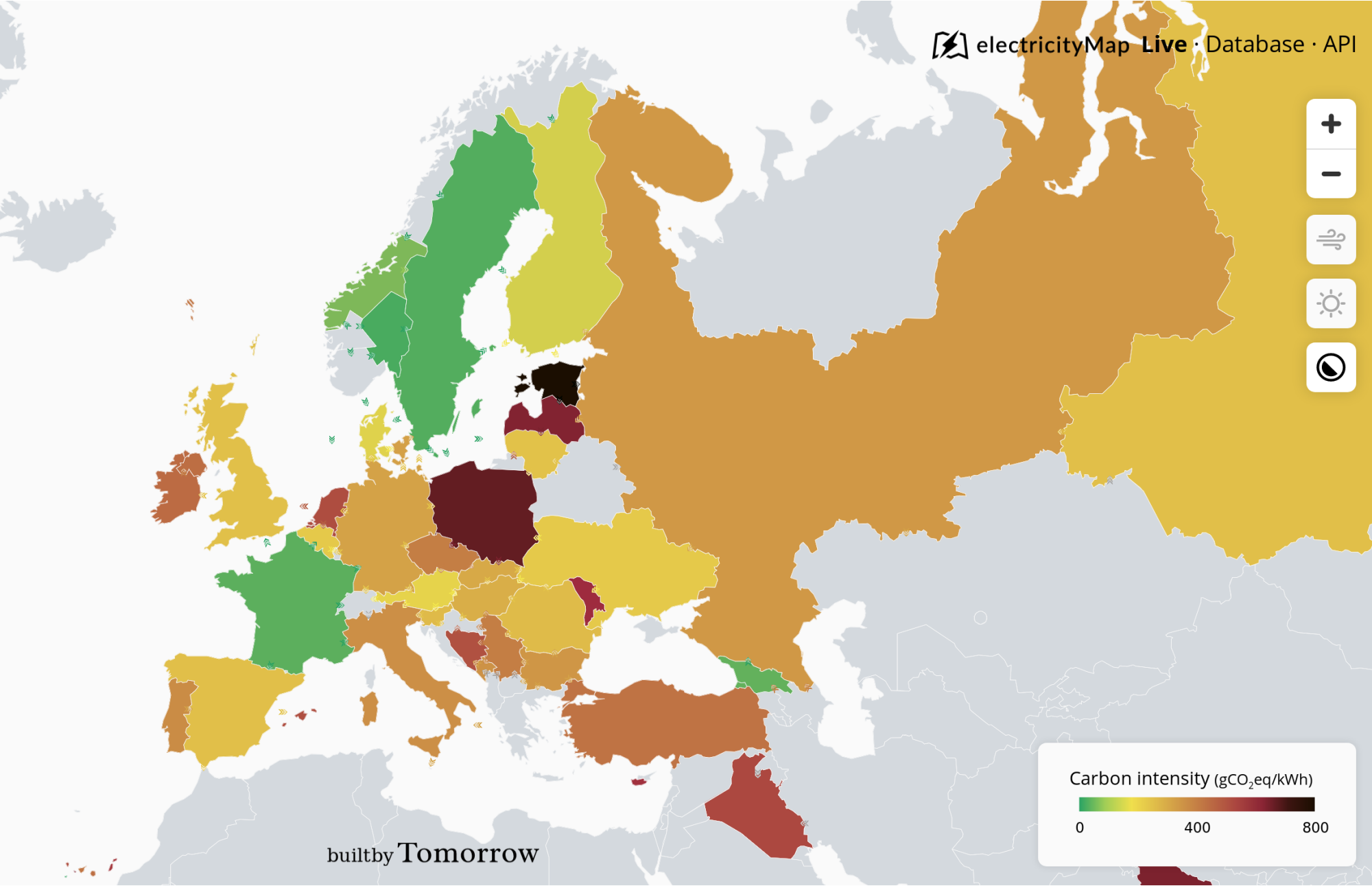


**The Internet produces about one billion tonnes of CO<sub>2</sub> every year (and it's rising)**











Greenpeace #ClickClean - Mozilla Firefox

Greenpeace #ClickClean

www.clickclean.org/uk/en/120%

#CLICKCLEAN


ABOUTEN

# Find out if your favourite apps are powered by renewables or dirty energy!


Since 2010 Greenpeace has been calling on major internet companies to power their data centres on renewable energy. Leaders from Facebook to Google have already committed, who will be next?


DOWNLOAD THE 2017 REPORT

VIDEO





Facebook







Google Play







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YouTube







Amazon Prime








Netflix









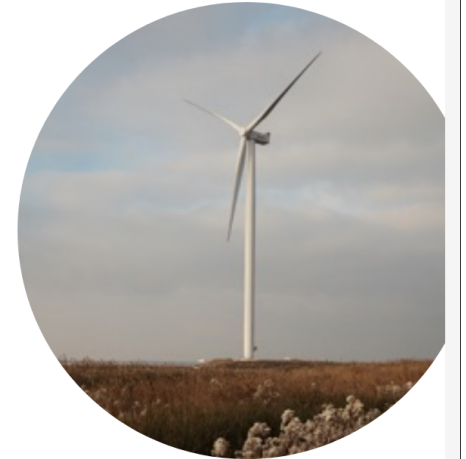




[Environment](#)[Projects](#)[Approach](#)[Resources](#)[2017 Environmental Report](#)

## Google Environmental Report 2017

2016 was a year of big milestones.  
We celebrated 10 years of carbon  
neutrality and announced that we would  
purchase enough renewable energy in  
2017 to match 100 percent of our global  
consumption for operations.





Renewable Energy Program | Sustainability | Akamai - Mozilla Firefox


Renewable Energy Program x

https://www.akamai.com/us/en/about/corporate-responsibility/sustainability/programs/renewable-ene

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Home > About Akamai > Corporate Responsibility > Akamai Sustainability > Programs > Renewable Energy Program

Renewable Energy Program

Akamai's purpose is to propel our customers faster forward by making the Internet business-ready: fast, reliable and secure. And now also green and clean.

**OUR COMMITMENT: BY 2020**

<b>50%</b> renewable energy for our global network operations	<b>Lower</b> greenhouse gas emissions than in 2015
---	--

Get In TouchSocialUnder Attack?





[DIRECTORY](#) [GREEN WEB FEED](#) [APP](#)

[NEWS](#) [OUR STORY](#) [PARTNER UP](#) [LOGIN](#)

Together towards a green web

## Is your website hosted **green**?

One day the Internet will run entirely on renewable energy. The Green Web Foundation believes that day should be within reach, and develops tools to speed up the transition towards a green Internet.

CHECK >

**36,440,968** checks performed to date,  
**13.6%** is powered by renewable energy

Percentage green domains



scanverify.com is grey

| Checked a few seconds ago

Trends Greenweb checks



The Internet uses more electricity than... - Mozilla Firefox

The Internet uses more ele x

+

← → ↻ 🏠

🔒 https://internethealthreport.org/2018/the-internet-uses-more-electricity-than/

📄 120% ⋮ 🗨️ 🌱 ⭐

📄 📖 📄 🌱 🗨️ 🗨️ 🗨️ 🗨️ 🗨️

☰

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moz://a

Internet Health Report 2018

Introduction Issues Participate Search Blog

Decentralization

# The Internet uses more electricity than...

April 2018

The Internet's data centers alone may already have the same CO2 footprint as global air travel. The good news is that many major Internet companies are becoming more energy conscious, and choosing more renewable sources of power for data centers and operations.

×

>

<

👍 🔄

How does this article make you feel?

63 😮

76 😊

17 😄

34 😞

32 🙌



**So what can I do?**





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EVENTS

TOPICS

WRITE FOR US



# A LIST APART



Illustration by [Kevin Cornell](#)

## Sustainable Web Design

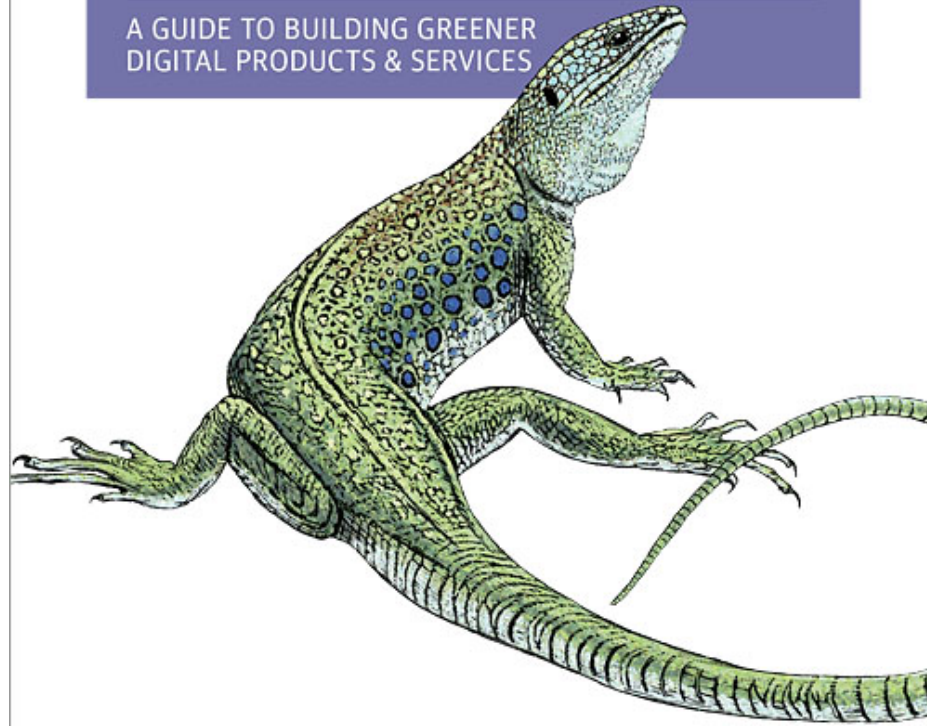
by [James Christie](#) · September 24, 2013



O'REILLY®

# Designing for Sustainability

A GUIDE TO BUILDING GREENER  
DIGITAL PRODUCTS & SERVICES



Tim Frick



# SUSTAINABLE UX

**DESIGN IN A WARMING WORLD  
FEB 12TH 2019**

@sustainableux



Ecograder - Mozilla Firefox

Ecograder

https://ecograder.com

120%

Ecograder

How green is your website?

Enter your web address below to find out now!

Your Website URL Required


http://

Your Email Address Optional

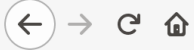
example@email.com

☐ Send me occasional tips on web sustainability, UX & more.

GRADE ME







How much carbon dioxide does  
your website produce?

## Estimate emissions

Your website address

https://

Monthly page views

1000 (optional)





# Dieter Rams' 10 Principles of Good Design

1. Good design is innovative
2. Good design makes a product useful
3. Good design is aesthetic
4. Good design makes a product understandable
5. Good design is unobtrusive
6. Good design is honest
7. Good design is long-lasting
8. Good design is thorough down to the last detail
9. Good design is environmentally friendly
10. Good design is as little as possible



**In essence, making websites sustainable means reducing the compute cycles required to serve them, and powering them with renewable energy**



# Sustainable Web Design

1. Findability
2. Performance Optimisation
3. Design & User Experience
4. Green Hosting

Source: <https://sustainablewebdesign.org/>



# 1. Findability

“The easier content is to find, the fewer pages a user has to load to locate information. This means fewer server requests are made and that unnecessary page elements — like photos and videos, which take up a lot of bandwidth — don’t load, either. These small energy savings accumulate over time.”

Source: <https://sustainablewebdesign.org/>



## 2. Performance Optimisation

“Sustainability and page speed go hand-in-hand. When your website runs more efficiently, you use less processing power, which means that your site uses less energy and will have a lower carbon footprint. Your customers expect to get the content they want instantaneously, and efficient pages load more quickly, reducing your site’s bounce rate and keeping customers engaged and satisfied.”

Source: <https://sustainablewebdesign.org/>



### 3. Design & User Experience

“Sustainable design is design that is efficient and accessible. Creating good experiences for both mobile and desktop users improves accessibility because it makes it easy for people to access your site no matter what hardware they have. Mobile-first web design also helps you avoid loading large assets designed for desktop machines, which improves your site’s speed and energy efficiency.”

Source: <https://sustainablewebdesign.org/>

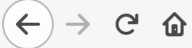


## 4. Green Hosting

“The servers that store the files that make up web pages require power 24 hours a day, so the single most impactful thing you can do to move toward a more sustainable website is use a hosting provider that runs on 100% renewable energy.”

Source: <https://sustainablewebdesign.org/>





Susty WP

Menu

# Building for sustainability with WordPress

## The Web's dirty secret

The Internet uses a *lot* of electricity. For most of the world, producing electricity means the burning of fossil fuels, this in turn means that **the Internet's carbon footprint may have already eclipsed global air travel**.

The Mozilla Internet Health Report 2018 states that, especially as the Internet expands into new territory, "**sustainability should be a bigger priority**". But as it stands, websites are growing ever more obese, which means that the energy demand of the web is growing exponentially.

There is a nascent but notable shift within the web industry towards



Delivering WordPress in 7KB | CSS-Tricks - Mozilla Firefox

Delivering WordPress in 7KB

https://css-tricks.com/delivering-wordpress-in-7kb/

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Delivering WordPress in 7KB

BY JACK LENOX ON JULY 10, 2018

PERFORMANCE, THEMES, WORDPRESS

Over the past six months, I've become increasingly interested in the topic of web sustainability. The carbon footprint of the Internet was not something I used to give much thought to, which is surprising considering my interest in environmental issues and the fact that my profession is web-based.

#The web in a warming world

As a brief recap, I attended MozFest in London last year. In between sessions, I

```
1 SignatureRequest request = new Sign
2 request.setSubject("My First embedd
3 request.setMessage("Awesome, right?
4
5
6
7
8
9
10 Draw it in
11 Type it in
12 Upload image
13 Use smartphone
14
15
```

CREATE SIGNATURE

Saved signatures

Draw your signature with your mouse

Draw it in

Type it in

Upload image

Use smartphone

Clear

The HelloSign API allows you to collect legally binding signatures from your own app.

12 Mon

Yellow

Green

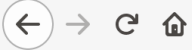
Purple



# What does your website *really* need?

- Carousels?
- Embedded videos?
- Endless sidebars?
- Big, heavy images?



[Home](#) [Articles](#) [About](#) [Newsletter](#)

# Designing for actual performance

*Published on 28 July 2017*

This is how it goes. We put a load of shit into a single web page. This makes the page slow. Slow to load, slow to render. Slow.

Instead of getting rid of the shit, we blame the page refresh. There's only one way to avoid the page refresh and that's AJAX.

However, AJAX still needs to render new (parts of) screens. More crucially it still has to make a request to the server. That's not all—there are penalties in using AJAX and it doesn't necessarily result in faster experiences.



# A bit about good practice

1. Simplify the interface
2. Reduce code
  - i. Create lean HTML
  - ii. Simplify your design system
  - iii. Use less script, use preprocessors responsibly, use content breakpoints
3. Images
  - i. Use the right image (gif, png, or jpg?)
  - ii. Smush the shit out of them
  - iii. Use progressive rendering
4. Backend stuff
  - i. `async` and `defer`, `preload` and `prefetch`
  - ii. HTTPS over HTTP2 (and PHP 7.2)
  - iii. ABC: Always Be Caching



**Taking this to an extreme...**


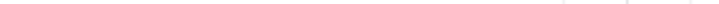






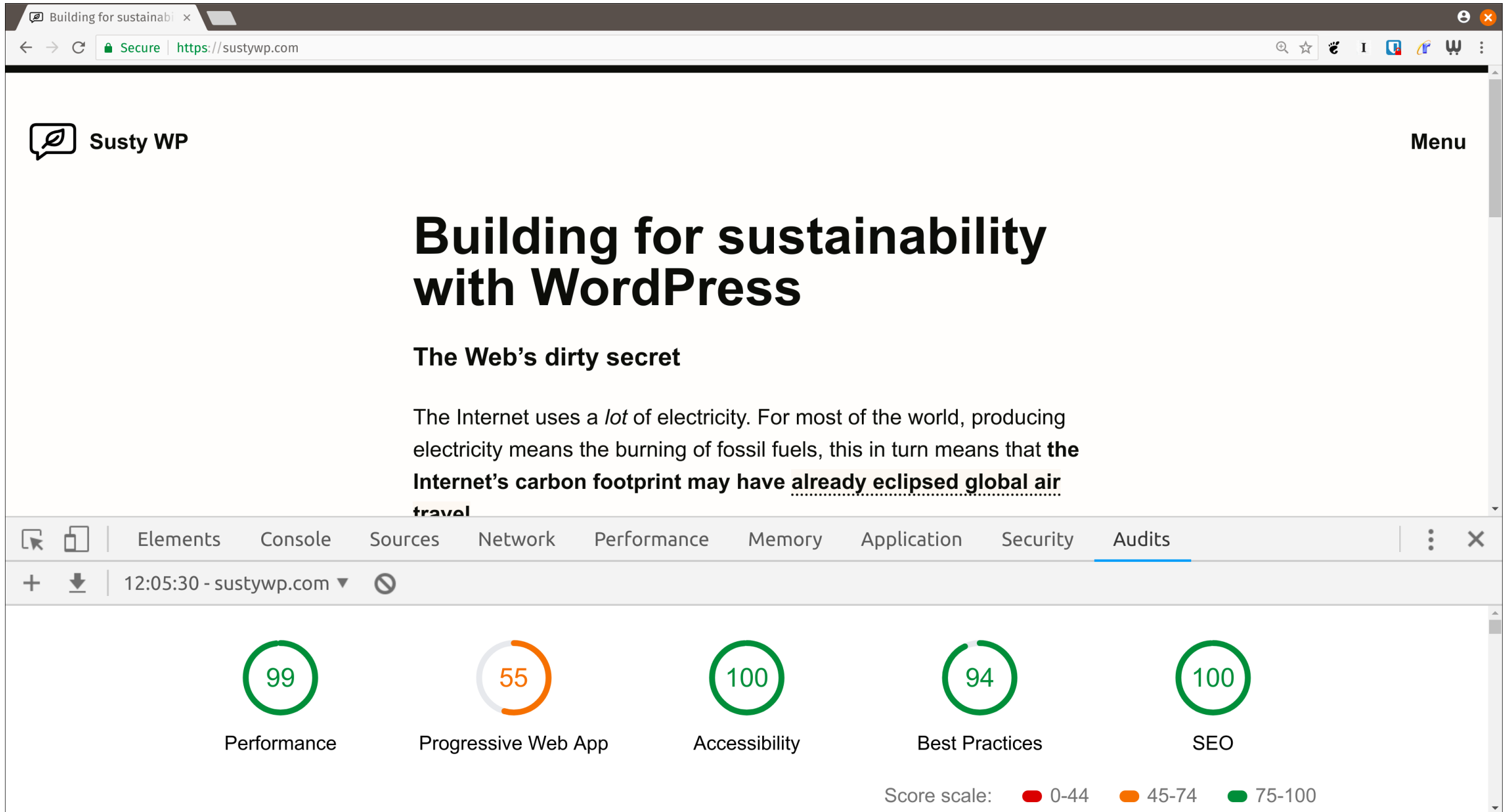
## Menu

## The Web's dirty secret

The Internet uses a *lot* of electricity. For most of the world, producing

Status	Method	File	Domain	Cause	Type	Transferred	Size	0 ms	640 ms	1.28 s
200	GET	/	 sustywp.com	document	html	3.10 kB	7.35 kB		→ 665 ms	
200	GET	autooptimize_acdd9f07ab89...	 sustywp.com	stylesheet	css	3.23 kB	8.34 kB			→ 41 ms







WebPagetest Test Result - Maidenhead : sustywp.com - 08/10/18 01:20:59 - Mozilla Firefox

WebPagetest Test Result - / X

← → ↺ 🏠

🔒 https://www.webpagetest.org/result/180809\_E7\_5b2df8290c4f51087ca06a7f01f7ac06/

📄 120% ⋮ 📧 🌐 ⭐

📄 📄 📄 📄 📄 📄 📄 📄

⋮

🕒 WEBPAGETEST

HOME

TEST RESULT

TEST HISTORY

FORUMS

DOCUMENTATION

ABOUT

Web Page Performance Test for

sustywp.com

From: Maidenhead, UK - Chrome - Cable

10/08/2018, 01:20:59

A

A

A

A

A

X

First Byte Time

Keep-alive Enabled

Compress Transfer

Compress Images

Cache static content

Effective use of CDN

Summary

Details

Performance Review

Content Breakdown

Domains

Processing Breakdown

Screen Shot

Image Analysis

Request Map

Tester: webpagetest-91.238.165.201

Test runs: 3

Re-run the test

Raw page data

Raw object data

Export HTTP Archive (.har)

View Test Log

Performance Results (Median Run)

	Load Time	First Byte	Start Render	Speed Index	Document Complete			Fully Loaded			
					Time	Requests	Bytes In	Time	Requests	Bytes In	Cost
First View (Run 2)	0.319s	0.257s	0.600s	600	0.319s	3	6 KB	0.637s	5	13 KB	\$----
Repeat View (Run 2)	0.169s	0.153s	0.400s	400	0.169s	1	3 KB	0.169s	1	3 KB	

Plot Full Results

Test Results

Run 1:

Waterfall

Screen Shot

Video

🔄

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jacklenox/susty: 🌱 A tiny WordPress theme focused on being as sustainable as possible. https://sustywp.com - Mozilla Firefox

jacklenox/susty: 🌱 A tiny WordPress theme focused on being as sustainable as possible. https://sustywp.com



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🔒 GitHub, Inc. (US) | https://github.com/jacklenox/susty 120% ... 📄 🌱 🛠️ 📢 B 🇺🇸 ☰






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📄 jacklenox / **susty**

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<> Code

🔔 Issues 2


🔗 Pull requests 0

📁 Projects 0

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⚙️ Settings


 A tiny WordPress theme focused on being as sustainable as possible. <https://sustywp.com>


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Add topics

 44 commits

 1 branch

 0 releases

 1 contributor

 GPL-2.0

Branch: master ▾


New pull request

Create new file








Upload files

Find file

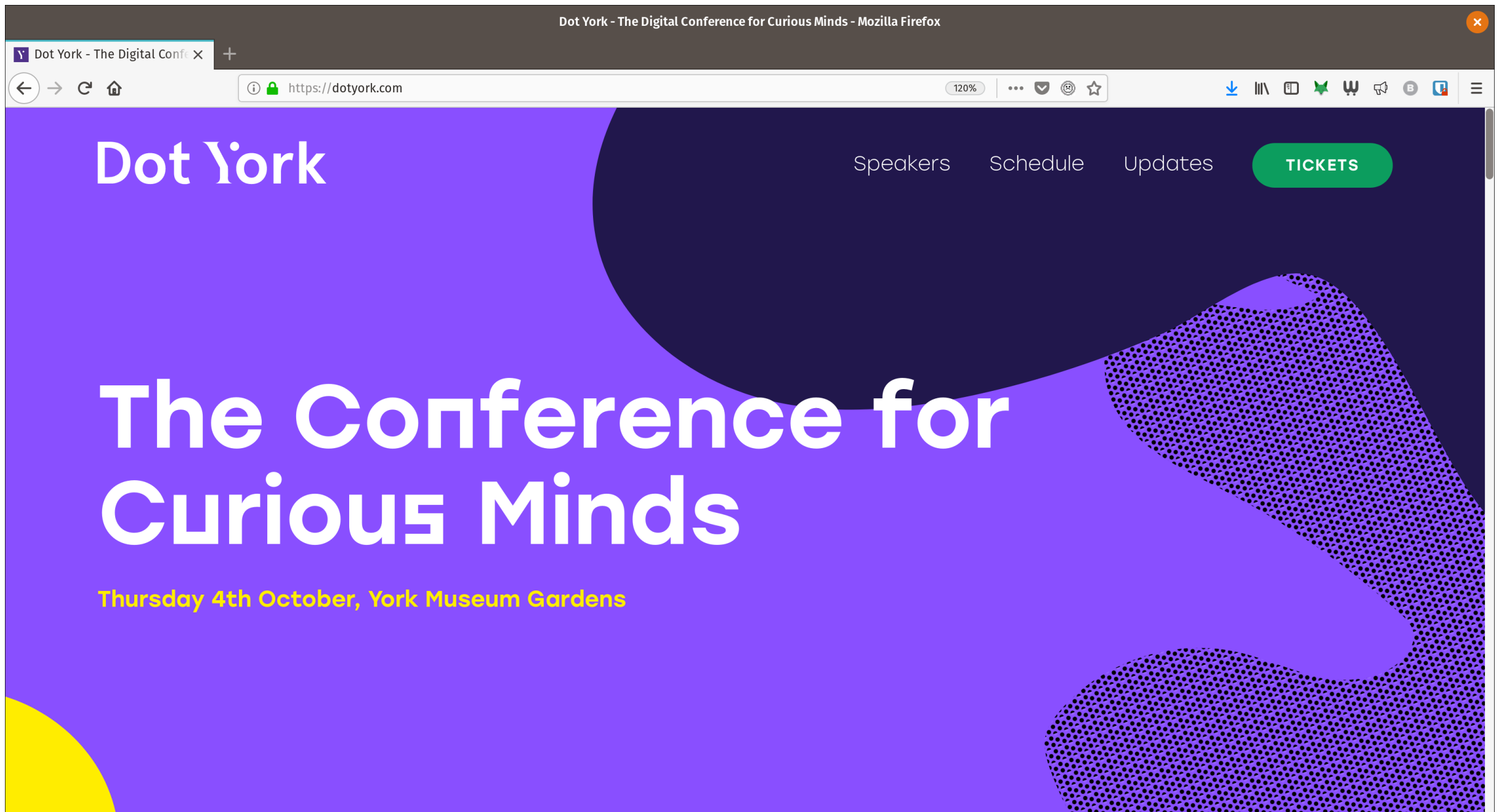
Clone or download ▾

 **jacklenox** Merge branch 'mshaw42-master'

Latest commit 2c98353 24 days ago

 <a href="#">images</a>	Removed 859 of 1213 bytes from logo	29 days ago
 <a href="#">inc</a>	Cut out the fat, rename to "susty"	2 months ago
 <a href="#">languages</a>	Initial commit of _s	3 months ago
 <a href="#">template-parts</a>	Cut out the fat, rename to "susty"	2 months ago
 <a href="#">404.php</a>	Cut out the fat, rename to "susty"	2 months ago
 <a href="#">LICENSE</a>	Initial commit of _s	3 months ago
 <a href="#">README.md</a>	Add more to README	2 months ago





246KB





6.7KB





**Bret Victor**

@worrydream

Follow



Worrying about sentient AI as the ice caps melt is like standing on the tracks as the train rushes in, worrying about being hit by lightning

5:23 am - 12 Aug 2015

1,439 Retweets 1,318 Likes





— Saul Griffith, on converting the world to clean energy

— *Vannevar Bush, on World War II*

BRET VICTOR / NOVEMBER 2015



**Do not go gentle into that good night.  
Rage, rage against the dying of the light.**

- Dylan Thomas



# Tack

@jacklenox



# Några frågor?\*

[@jacklenox](#)

\* Snälla fråga inte på svenska, jag låtsas bara

Slides available at: <https://speakerdeck.com/jacklenox/what-wordpress-developers-can-do-about-climate-change>