



Building a greener web

Web sustainability for designers and developers

CSS { In Real Life }

Tips, tricks and tutorials on the web's most beautiful language.

Search by topic...

- css
- workflow
- javascript
- opinion
- css grid
- layout
- custom properties
- tooling
- careers
- inspiration
- animation
- environment
- events
- html
- video

[All topics](#)

Categories

- [All](#) (173)
- [Articles](#) (166)
- [Quick tips](#) (4)
- [Notes](#) (2)

Setting Up a New(ish) MacBook

Tue Feb 28 2023

I recently dusted off a relatively old (~5 years) MacBook and replaced the battery with the plan that I could use it as a secondary machine, for my “non-work” stuff. The last couple of times I’ve got a new Mac I’ve gone for the option of cloning my old setup, so I don’t need to instal...

[Read more →](#)

Resizing with CSS

Fri Feb 17 2023

Senior Front End Developer at



Ada Mode

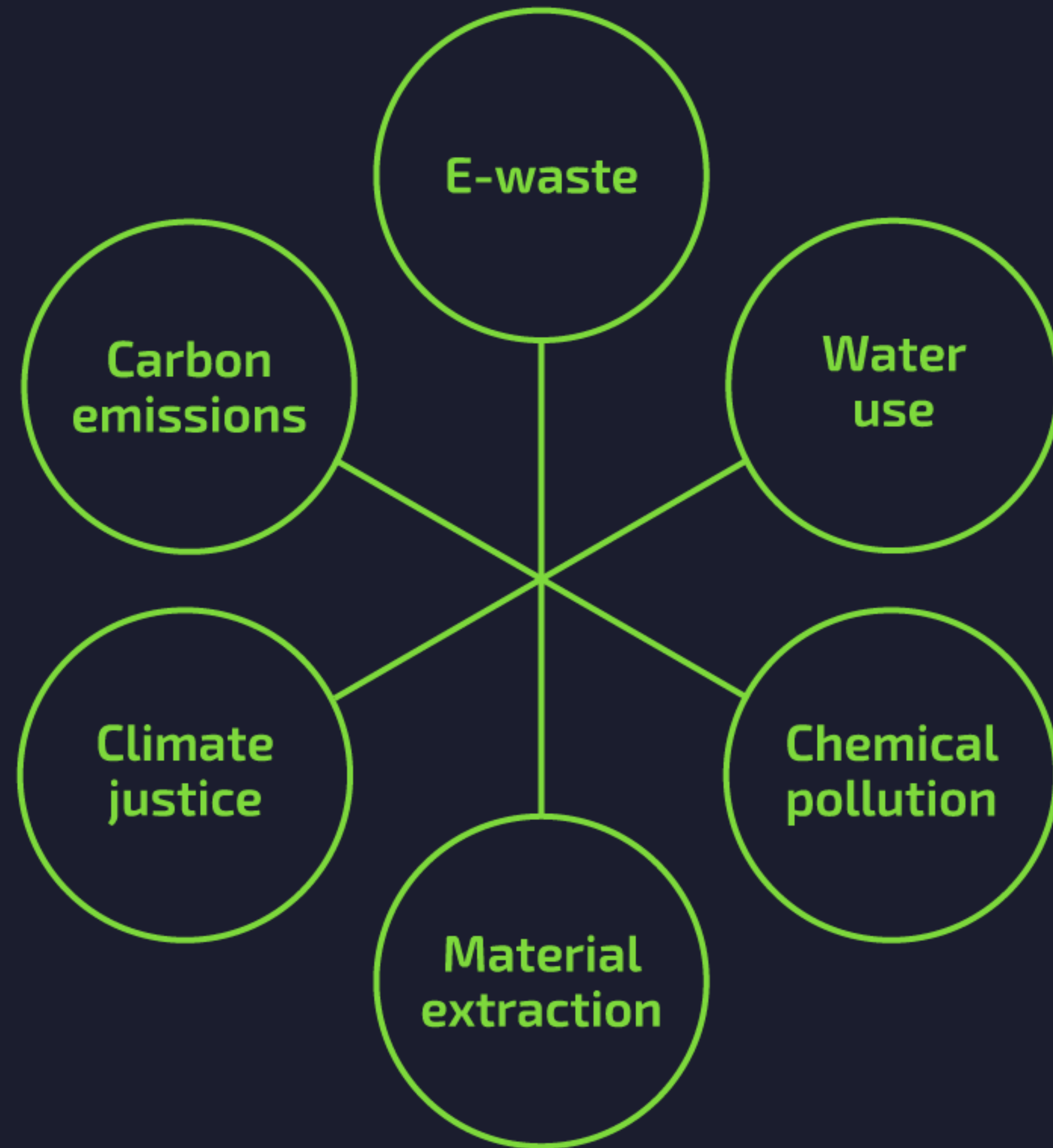


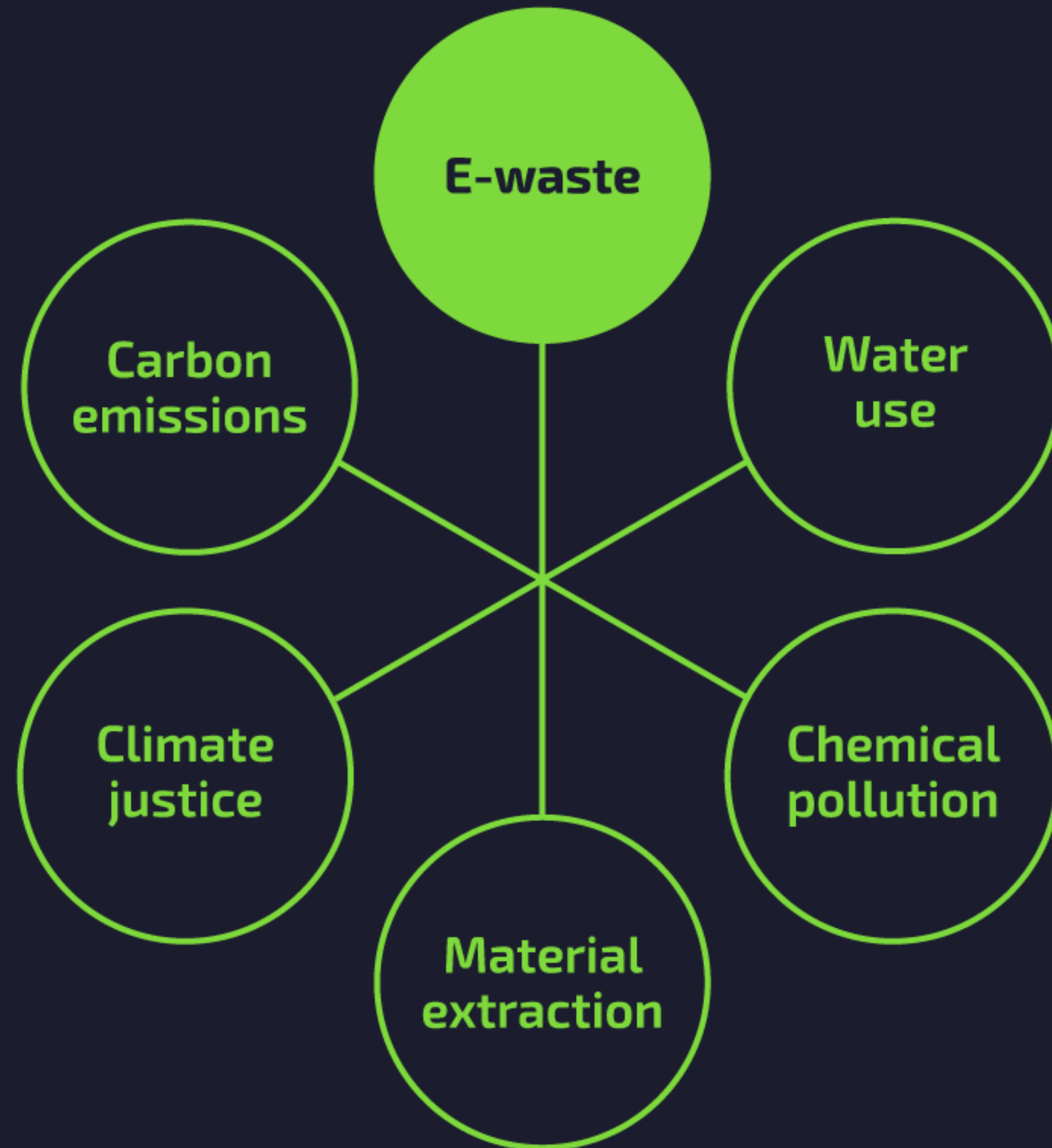


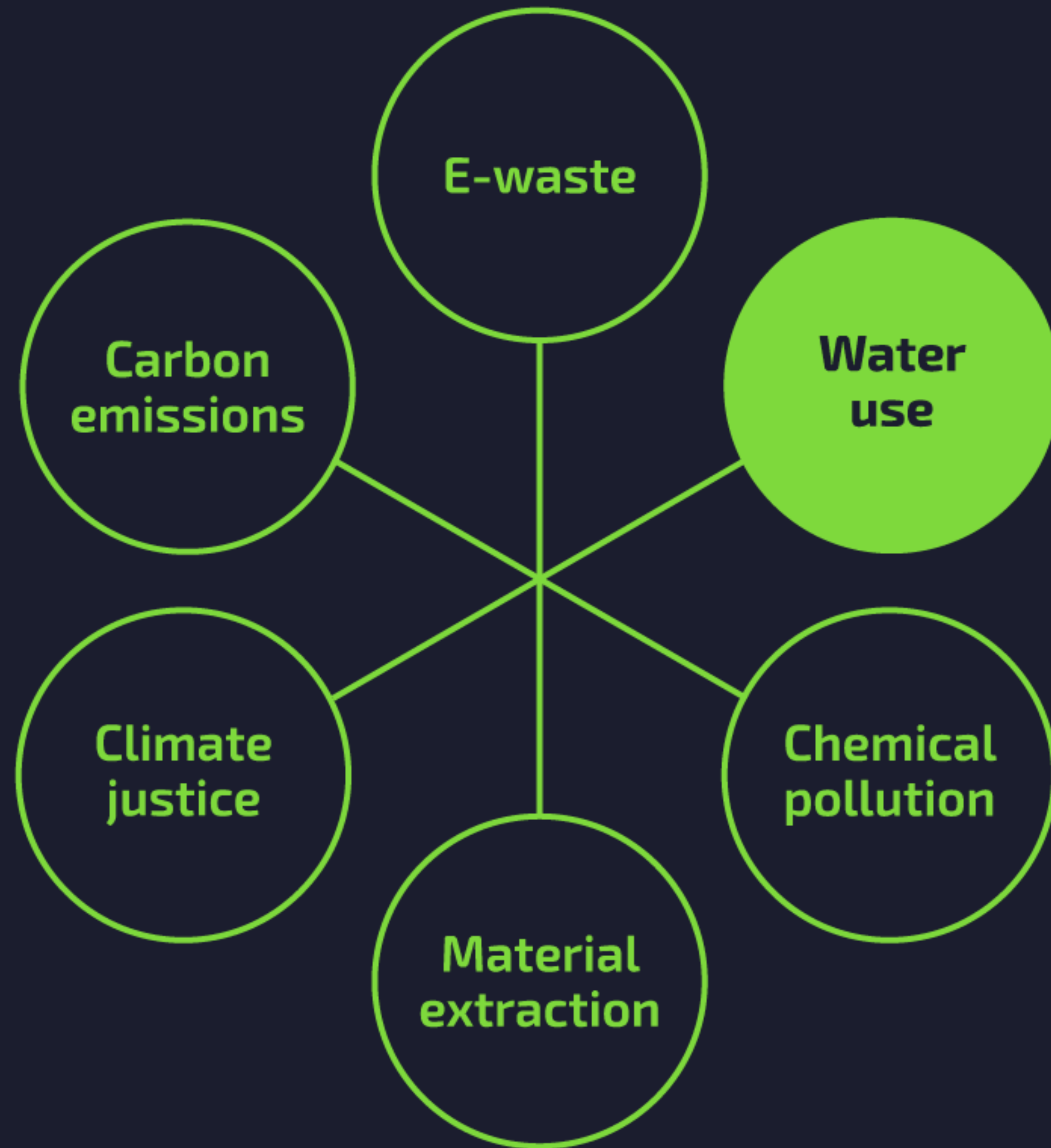


3.7%

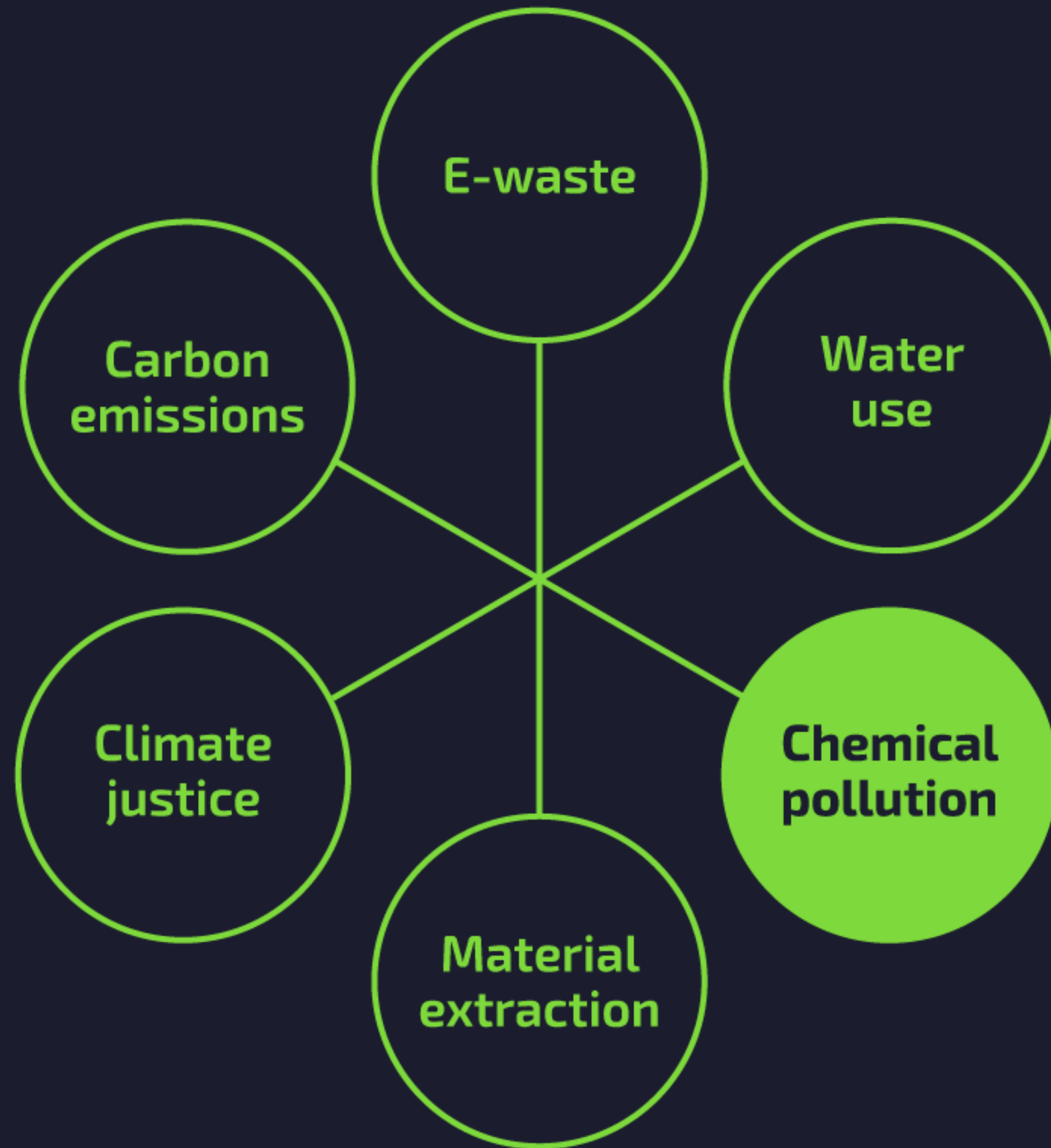
of worldwide CO₂e emissions

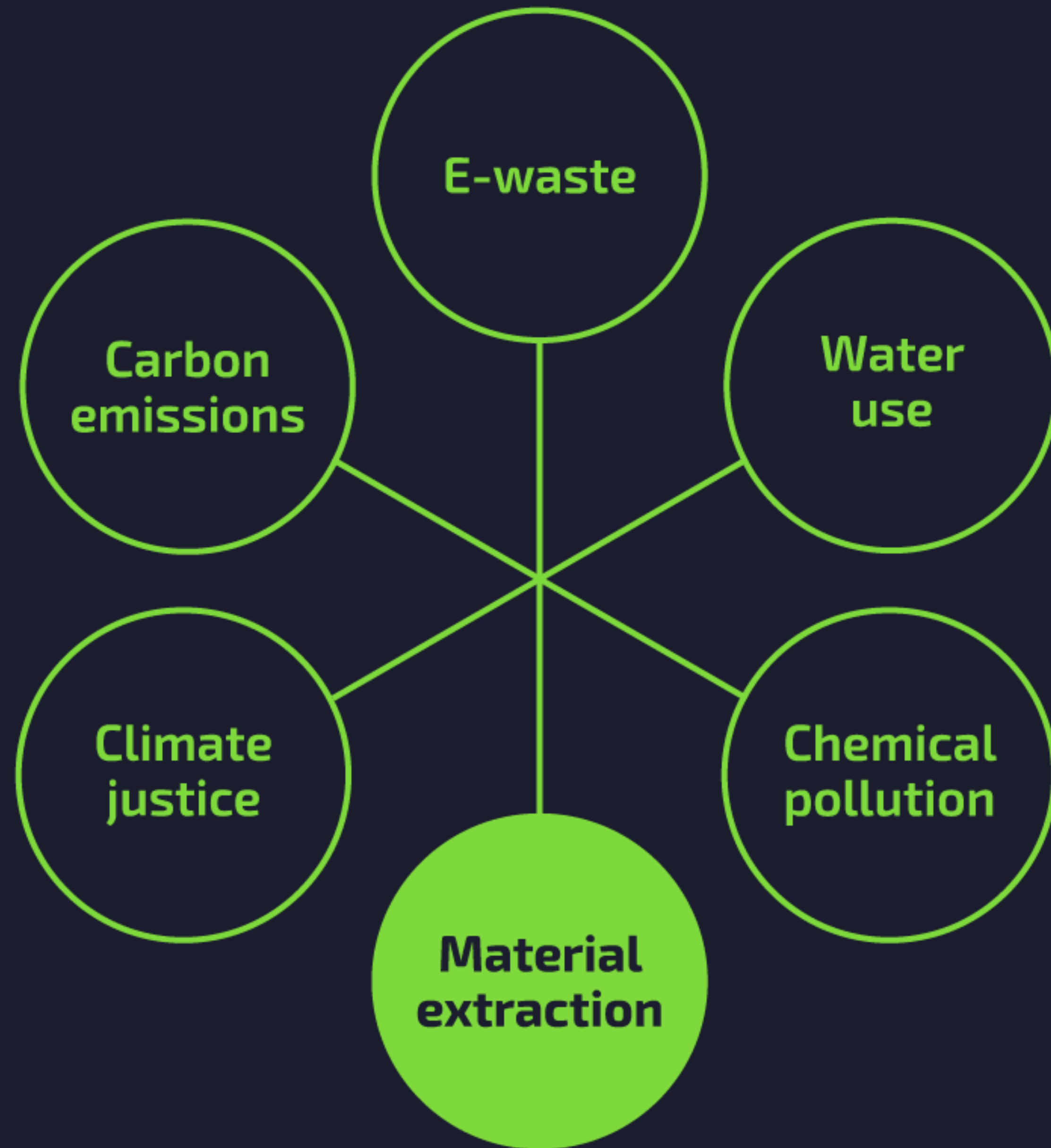


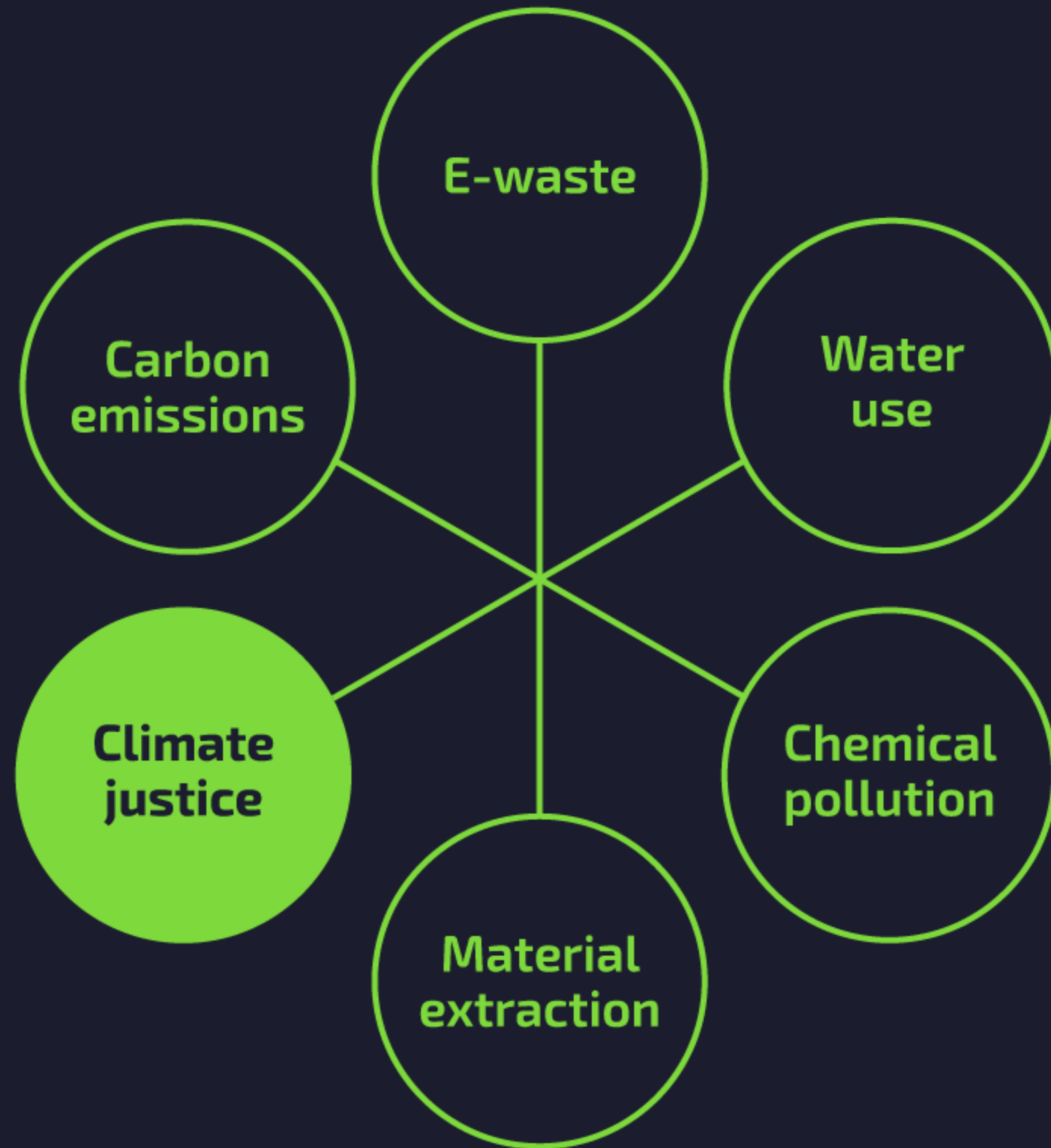


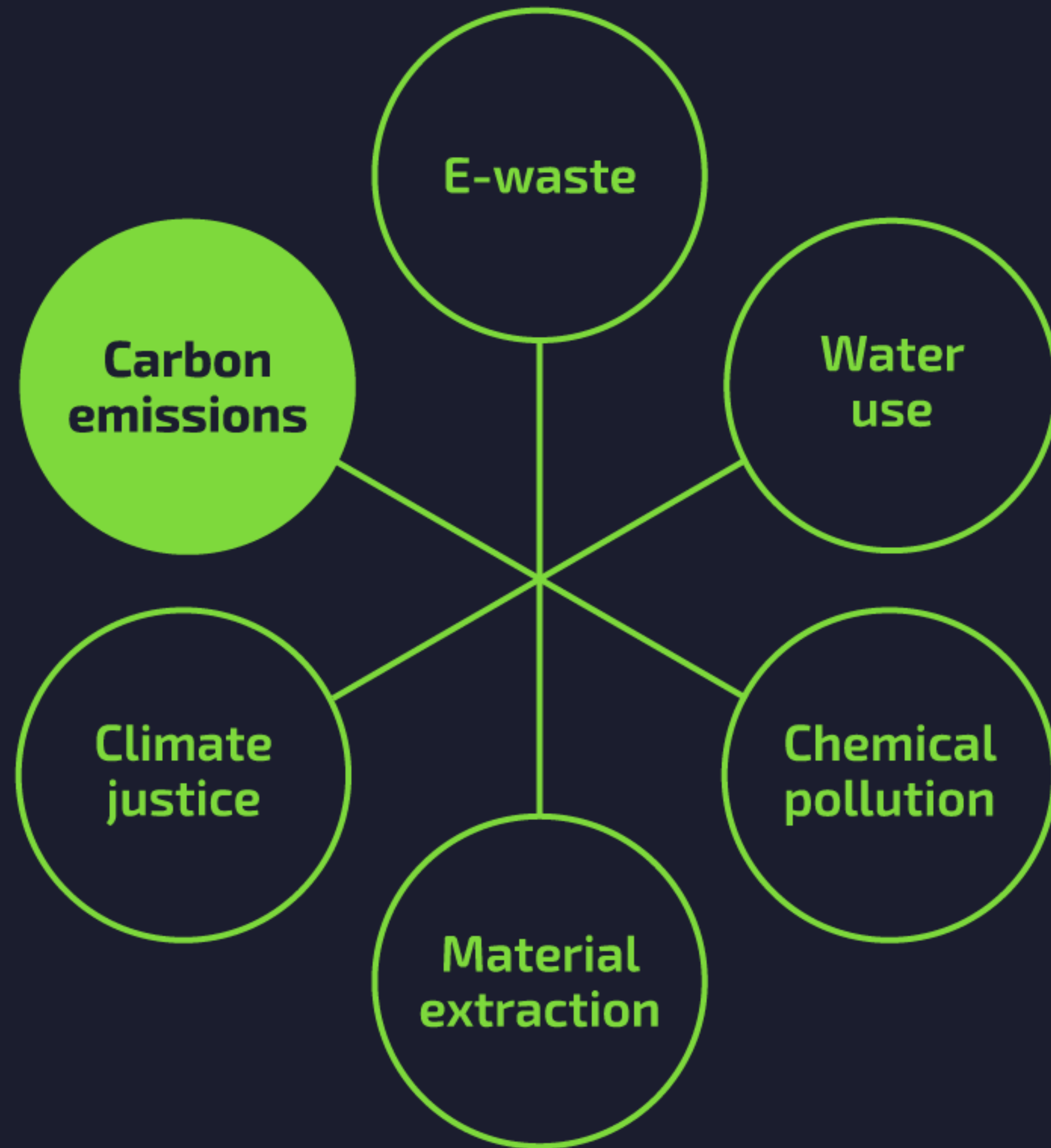












Device
manufacture



Infrastructure



Device use

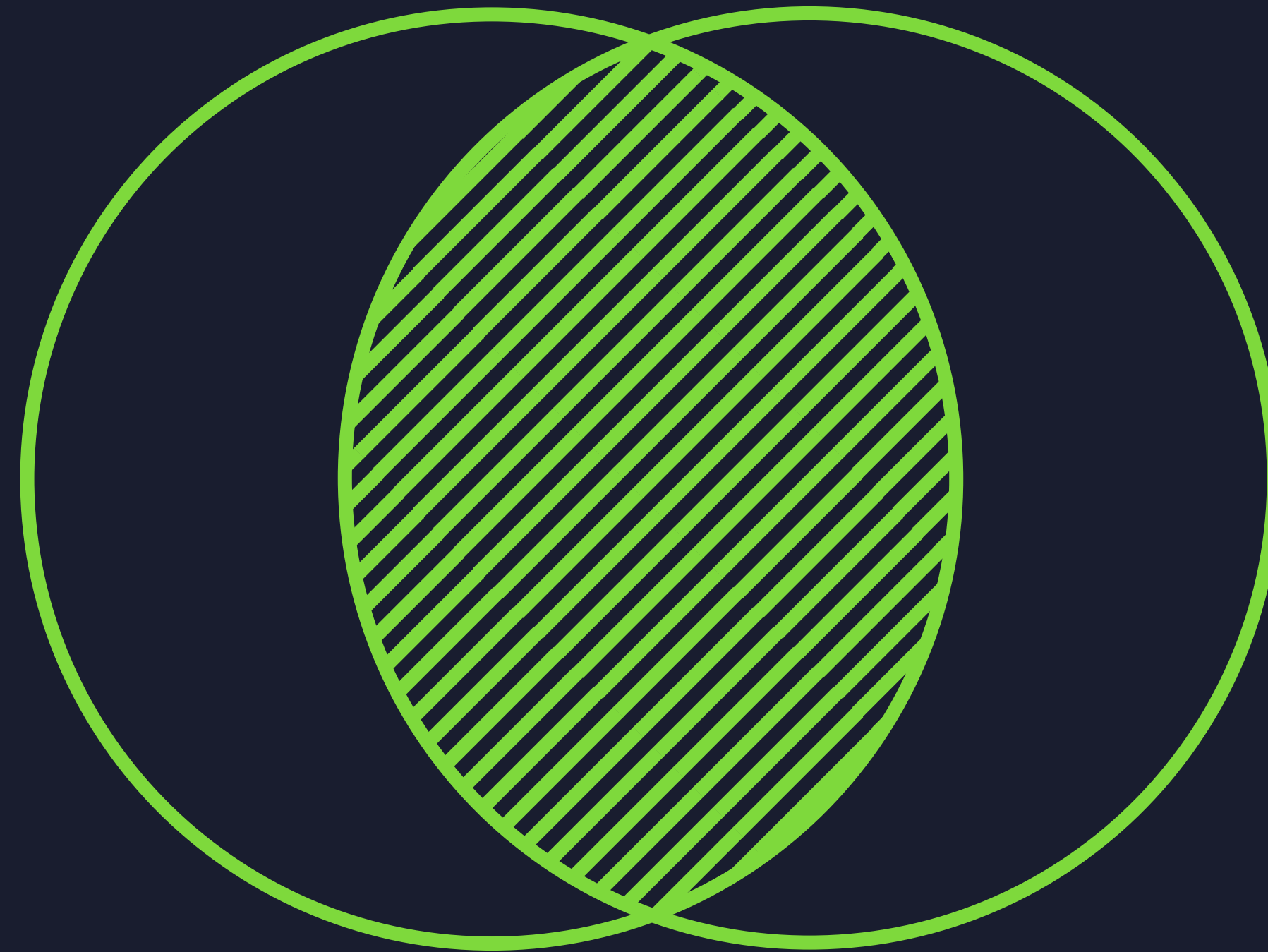




2 MB

Average web page size

Fast websites



Low-carbon
websites



WebPageTest



Platform > WebPageTest

Start Test

Test History

Products ▾

Pricing

Resources ▾

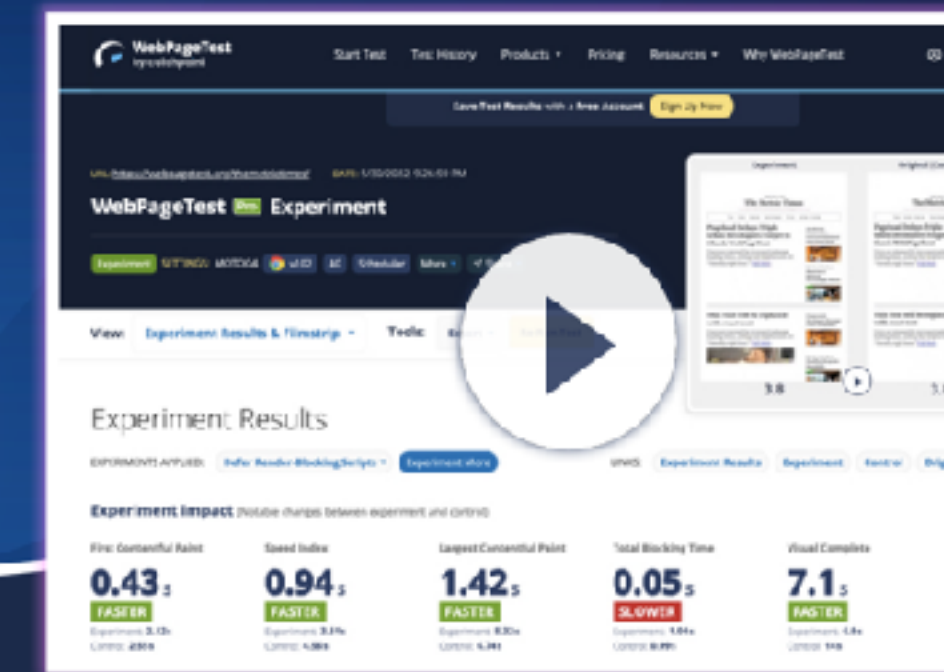
About

Login

Say hello to **WebPageTest Pro**

All of the WebPageTest features you already love, plus **API Access** & **No-Code Experiments!**

[View Plans & Learn More >>](#)



Start a **Site Performance** Test!

Enter a website URL...

Simple Configuration 3 test runs from recommended location and browser presets



WebPageTest



PageSpeed Insights

Report from Apr 25, 2023, 4:47:09 PM

https://css-irl.info/

Analyze

Mobile Desktop

Discover what your real users are experiencing

This URL Origin

Core Web Vitals Assessment: **Passed**

Expand view

Largest Contentful Paint (LCP)

1.1 s

First Input Delay (FID)

3 ms

Cumulative Layout Shift (CLS)

0.08

OTHER NOTABLE METRICS

First Contentful Paint (FCP)

1.1 s

Interaction to Next Paint (INP)

34 ms

Time to First Byte (TTFB)

0.6 s

Latest 28-day collection period

Various desktop devices

Many samples (Chrome UX Report)

Full visit durations

Various network connections

All Chrome versions



WebPageTest



PageSpeed Insights



GTMetrix

The screenshot shows the GTmetrix website homepage. At the top left is the GTmetrix logo with the URL www.gtmtrix.com. To the right of the logo are navigation links: Features, Pricing, Resources, and Blog. Further right are links for Log In and Get Started. The main heading asks "How fast does your website load? Find out with GTmetrix". Below this is a sub-heading: "See how your site performs, reveal why it's slow and discover optimization opportunities." A large input field contains the placeholder text "Enter URL to Analyze..." and a blue button labeled "Test your site". Below the input field, the analysis options are listed: "Testing in Vancouver, Canada using Chrome (Desktop) with an Unthrottled Connection." with a link to "Change Options". A "Latest News" section features three articles with titles, short descriptions, links, and dates. At the bottom, there is a section with logos of various companies (SAMSUNG, Microsoft, Adobe, L'ORÉAL, etc.) and a large counter showing "1,061,619,036 pages analyzed so far" along with the text "Join thousands of people and companies around the world".

Core Web Vitals

LCP

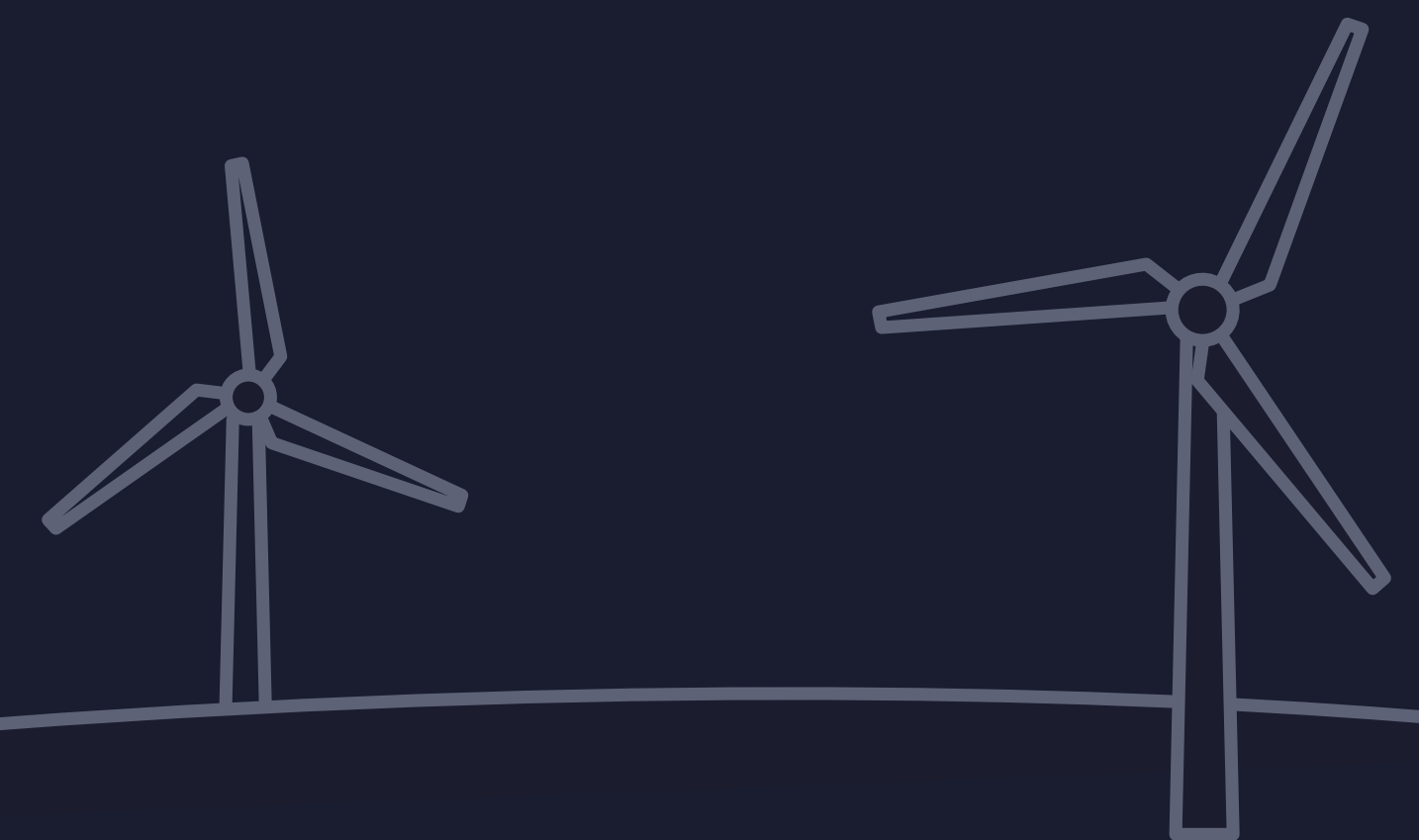
Largest Contentful Paint

FID

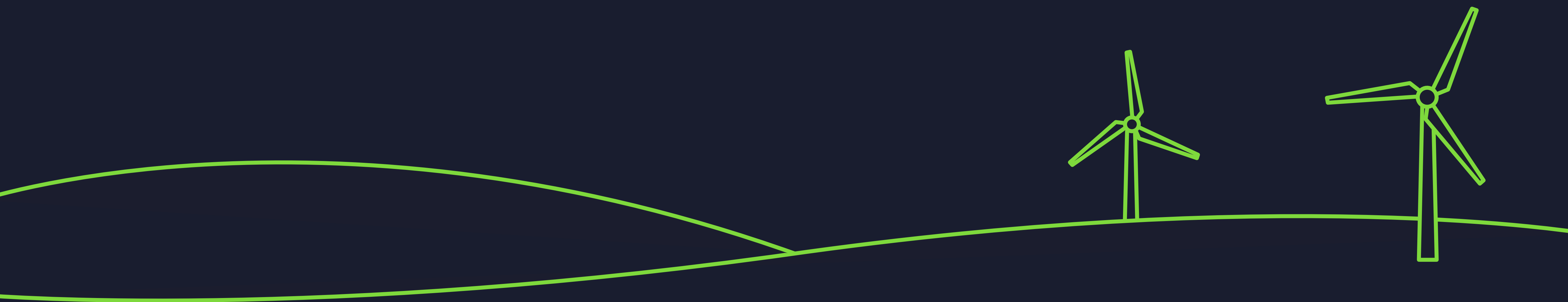
First Input Delay

CLS

Cumulative Layout Shift



Carbon budgets



websitecarbon.com

Website Carbon Calculator

[Get the badge!](#) [How does it work?](#) [FAQ](#)

How is your website impacting the planet?

Estimate your web page carbon footprint:

Your web page address

Calculate

By using this carbon calculator, you agree to the information that you submit being stored and published in our public database.

css-irl.info produces



7.28kg of CO2 equivalent.

The same weight as 0.05
sumo wrestlers and as much
CO2 as boiling water for 987
cups of tea



8 billion bubbles

Woah, that's a lot of bubbles!

ecoping.earth

Ecoping [Indexes](#) [Pricing](#) [FAQs](#) [Blog](#)

Login

[Get Started - It's Free](#)

Making your website more eco-friendly

Tools to reduce your company's website **carbon emissions** & boost performance

[Get Your Free Daily Report](#)



EcoScore
Needs improvement

CO2 grams ⓘ
3.67

Renewables ⓘ
46%

CO2 intensity ⓘ
379.83
gCO₂eq/kWh

Transferred ⓘ
24.49 MB

Load Time ⓘ
3.7s

Requests ⓘ
162

Join more than 350+ companies taking action.

 PAN MACMILLAN

de
zeen

Siegel+Gale



digitalbeacon.co

Beacon



https://css-irl.info

First visit

CO₂

0.086g

SIZE

116.53 KB

Return visit

CO₂

0.081g

SIZE

109.64 KB

Overall this web page is rated as amazing when it comes to its carbon footprint

This website is hosted using renewable energy or carbon offsets.

EMISSIONS CALCULATOR

Monthly visits

10000

New / Returning (%)

40%

60%

Total: 832.90g PER MONTH

This is equivalent to:

Driving 0.60 miles in a Tesla Model S

Watching 1 hours of Netflix (in HD)

At least 1 trees would be needed to offset the CO₂ in a year



Images



43%

Bytes transferred

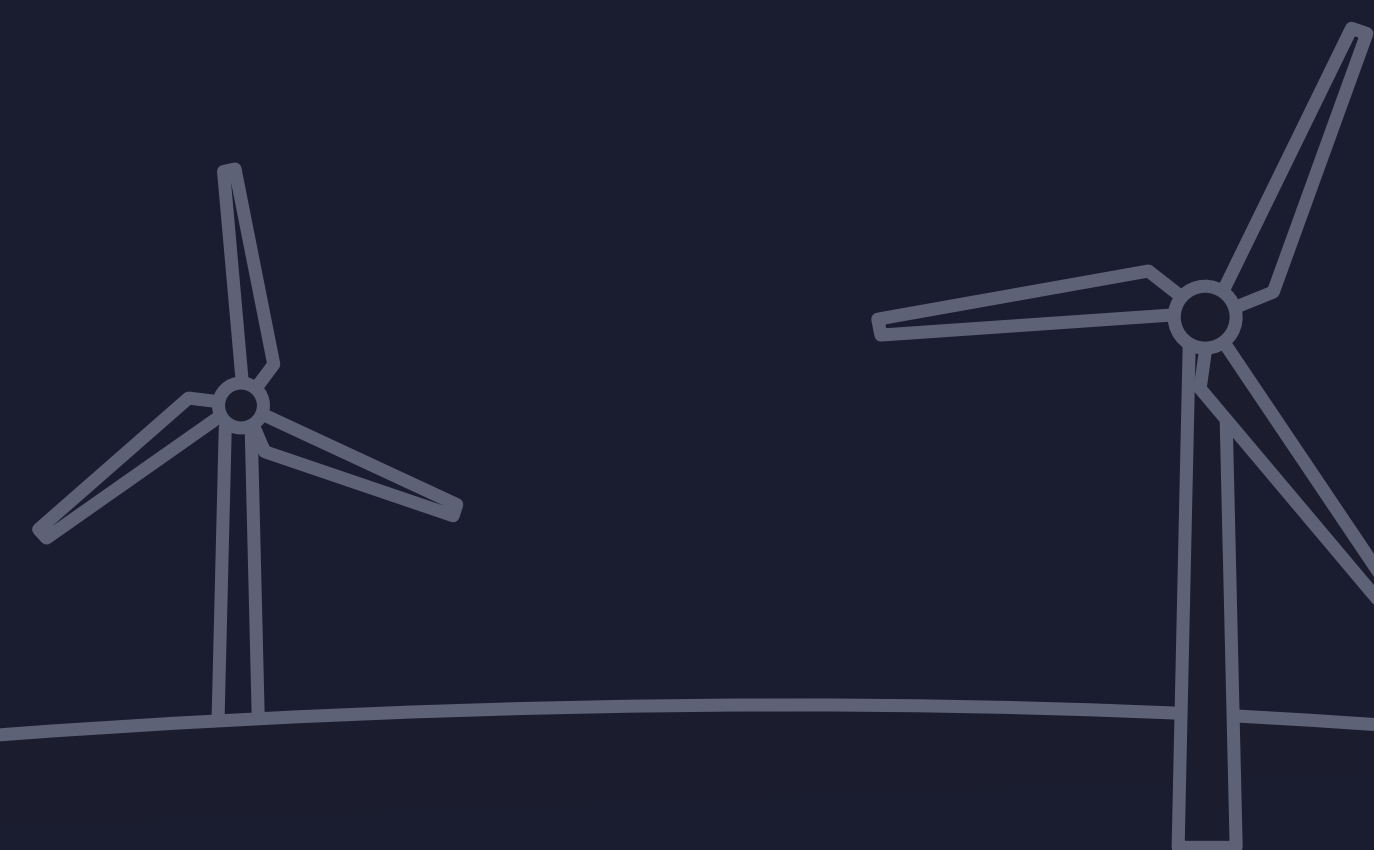


30%

Requests



Use fewer images





Use fewer images



Use smaller images



556kb



326kb



-41%



Use fewer images



Use smaller images



Optimise



326kb



-69%

100kb





Use fewer images



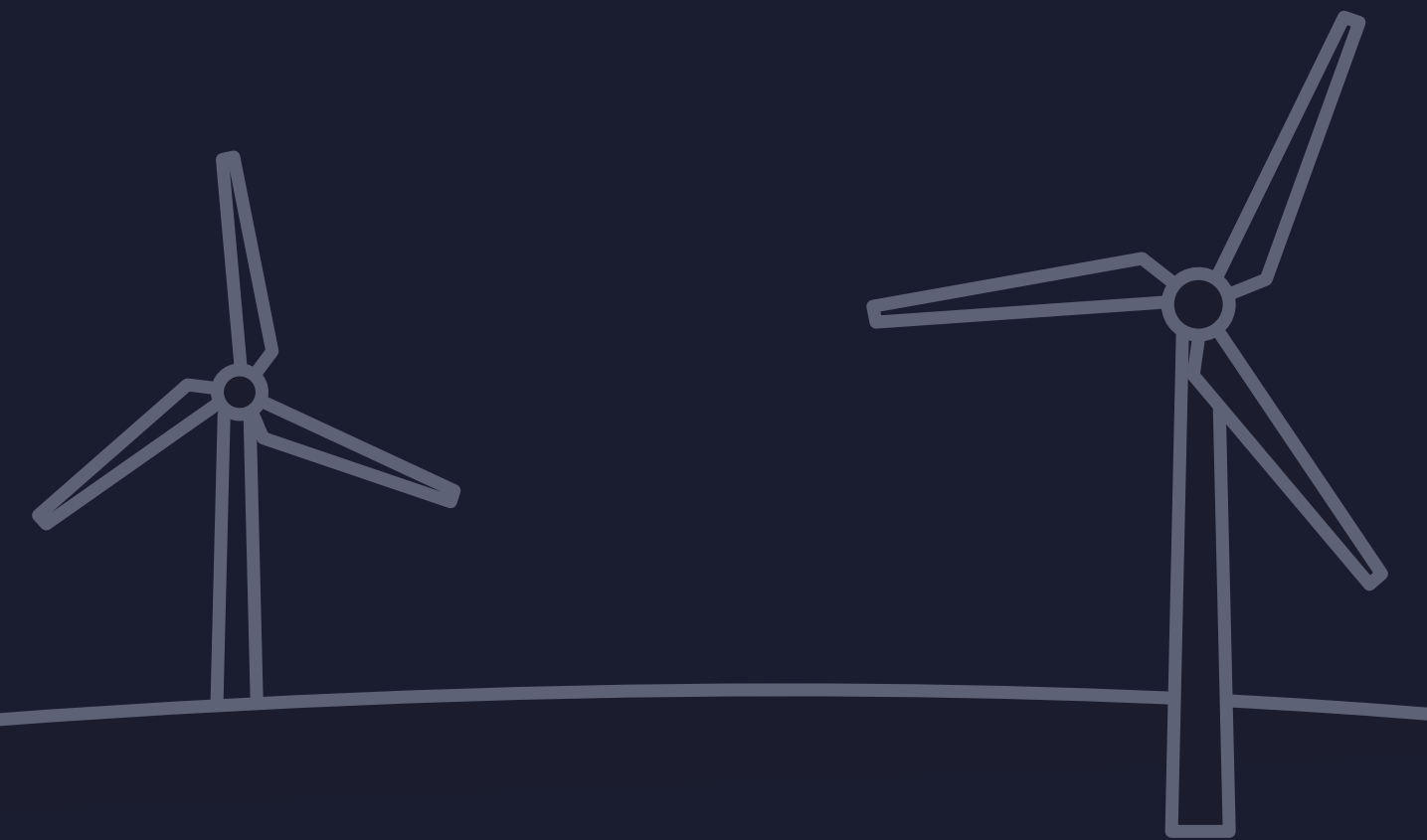
Use smaller images



Optimise



Serve the right images for the user's device





Use fewer images



Use smaller images



Optimise



Serve the right images for the user's device



Use modern image formats (WebP, AVIF)



```
<picture>
  <source
    type="image/webp"
    srcset="robin.webp 400w..."
    sizes="(min-width: 1200px) 50vw, 100vw">
  
</picture>
```



Use fewer images



Use smaller images



Optimise



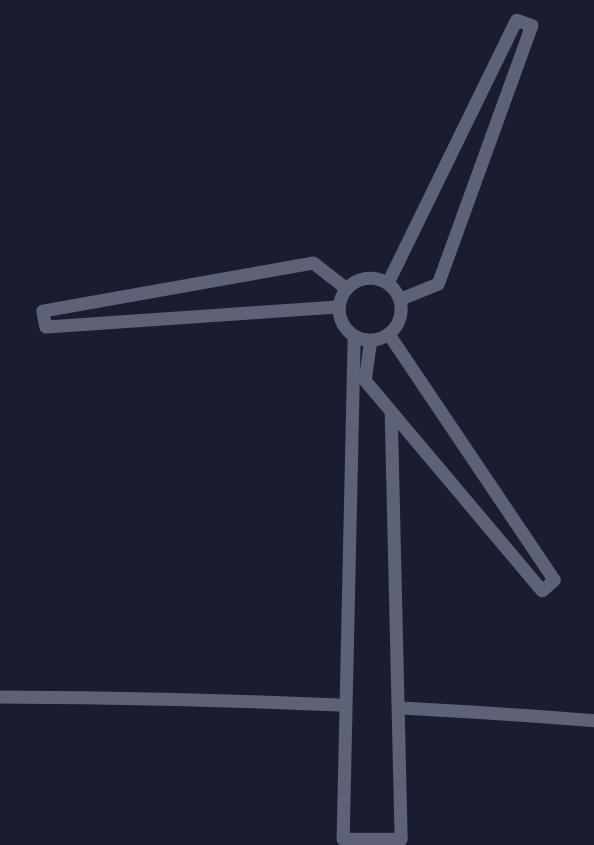
Serve the right images for the user's device



Use modern image formats (WebP, AVIF)



Lazyload



```

```



Aa

Fonts



Use fewer fonts





Use fewer fonts



Consider variable fonts



Variable font example

Lorem ipsum dolor, sit amet consectetur adipisicing elit. Placeat tenetur maxime impedit accusantium illum excepturi quis odit magni exercitationem pariatur veniam fuga, vel veritatis fugit, consequuntur assumenda quisquam, perferendis dolorem.

Heading 2

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Ea sint illo quo consequatur hic expedita vero doloremque dignissimos itaque veniam architecto, id alias, quia repudiandae dolore eaque et est nulla?

“Lorem ipsum dolor sit amet consectetur adipisicing elit. Minima ab qui voluptatum asperiores natus perferendis repellat, recusandae rem inventore adipisci similique dicta.”

Heading 3

Lorem ipsum dolor sit amet consectetur adipisicing elit. Voluptate unde eveniet veritatis blanditiis pariatur obcaecati non debitis minus temporibus sunt, rem eius iure aliquam



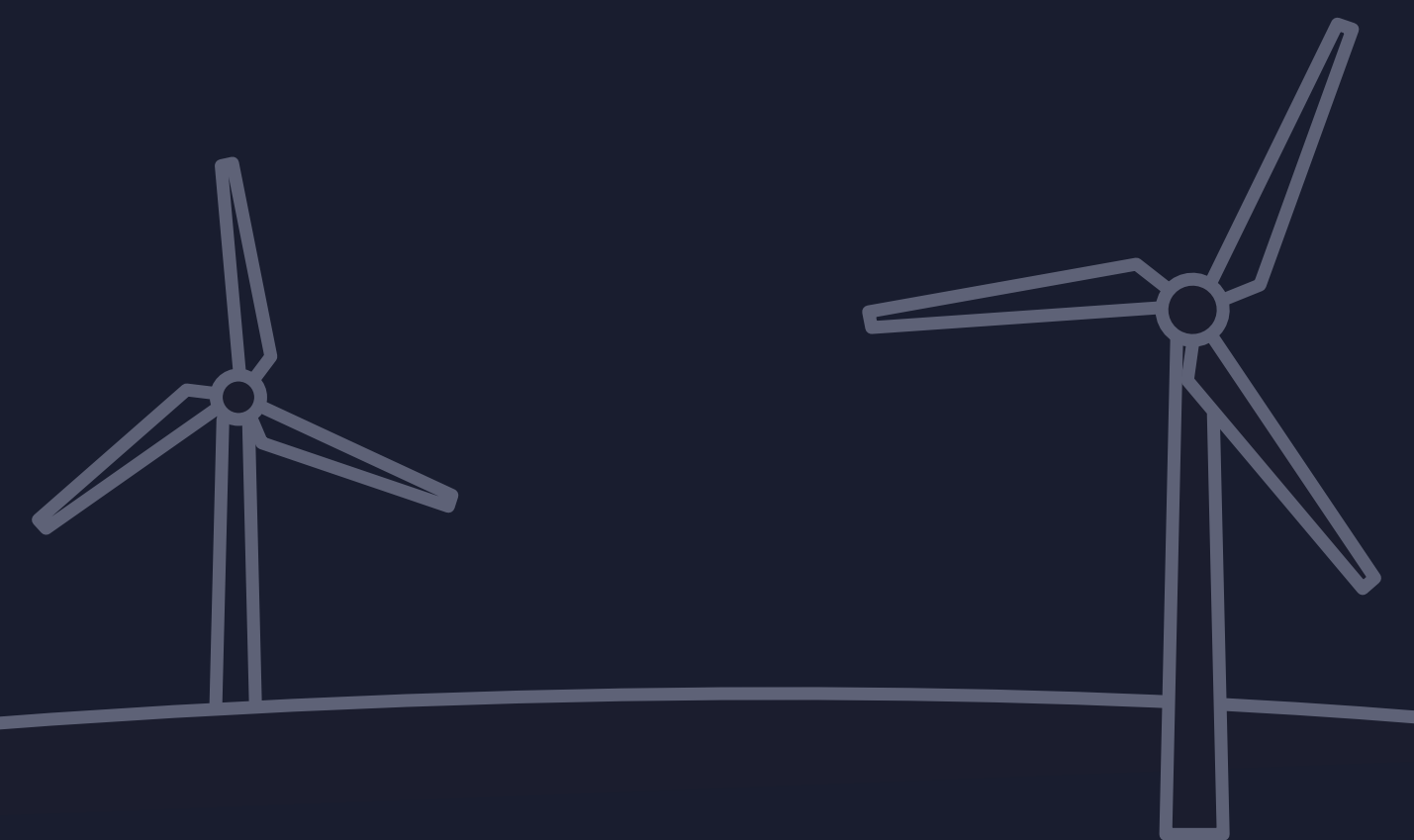
Use fewer fonts



Consider variable fonts



Use modern font formats (e.g. WOFF2)



github.com/google/woff2





Use fewer fonts



Consider variable fonts



Use modern font formats (e.g. WOFF2)



Subset fonts



w3.org/TR/IFT

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Incremental Font Transfer

W3C Working Draft, 28 June 2022



▼ More details about this document

This version:

<https://www.w3.org/TR/2022/WD-IFT-20220628/>

Latest published version:

<https://www.w3.org/TR/IFT/>

Editor's Draft:

<https://w3c.github.io/IFT/Overview.html>

History:

<https://www.w3.org/standards/history/IFT>

Feedback:

public-webfonts-wg@w3.org with subject line "[IFT] ... message topic ..." ([archives](#))

[GitHub](#)

[Inline In Spec](#)

Editors:

[Chris Lilley](#) (W3C)

[Myles C. Maxfield](#) (Apple Inc.)

[Garret Rieger](#) (Google Inc.)

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Abstract



Use fewer fonts



Consider variable fonts



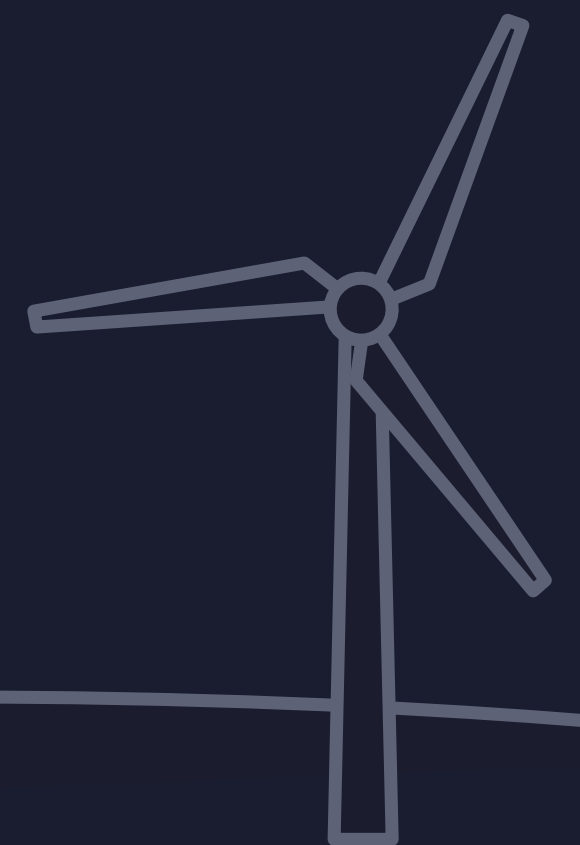
Use modern font formats (e.g. WOFF2)



Subset fonts



Self-host



gwfh.mranftl.com/fonts

⌵

google-webfonts-helper
Get eot, ttf, svg, woff and woff2 files + CSS snippets

Urbanist sars-serif

google-webfonts-helper

A Hassle-Free Way to Self-Host Google Fonts

by [Mario Ranftl](#)

⊕ Select a font to continue...

[View project on GitHub](#) [Read the author's note](#) [API](#)

Useful resources

- [Google Fonts Open Source Font Attribution](#)
- [Using @font-face](#)
- [Can I use woff? \(compatibility information\)](#)
- [WOFF 2.0 – Learn more about the next generation Web Font Format](#)
- [Sample MIME server config \(Apache, Nginx, IIS\)](#)
- [Google Fonts Webpack Plugin](#)
- [How to Host Google Fonts Locally in WordPress](#)



Third-party embeds

YouTube embeds

Testing the performance impact of social media embeds.

[Home](#) [Twitter](#) [Twitter with two embeds](#) [Twitter with video](#) [Twitter with YouTube](#) [YouTube](#) [Instagram](#)

Single embed

Transferring data from social-media-embed-test.netlify.app...

The screenshot shows the Network tab of a browser's developer tools. The top bar includes icons for Inspector, Console, Network, and other tools. Below the bar, there are filters for 'Filter URLs', 'Disable Cache' (checked), and 'No T...'. A list of network requests is shown with columns for Status, Method, Domain, File, Initi..., T..., Transf..., and Size. Two requests are visible: a GET request to 'youtube.html' and a POST request to 'log_event?alt=json&ke... xhr'. At the bottom, a summary bar shows '2 requests', '0 B / 0 B transferred', and 'Finish: 2 ms'.

Status	Meth...	Domain	File	Initi...	T...	Transf...	Size
	GET	social-...	youtube.html	doc...			
	POST	www.yo...	log_event?alt=json&ke...	xhr			

2 requests | 0 B / 0 B transferred | Finish: 2 ms



Avoid embeds





Avoid embeds



Defer loading if possible





Avoid embeds



Defer loading if possible



Lazyload





Avoid embeds



Defer loading if possible



Lazyload



Import on interaction



github.com/paulirish/lite-youtube-embed

readme.md

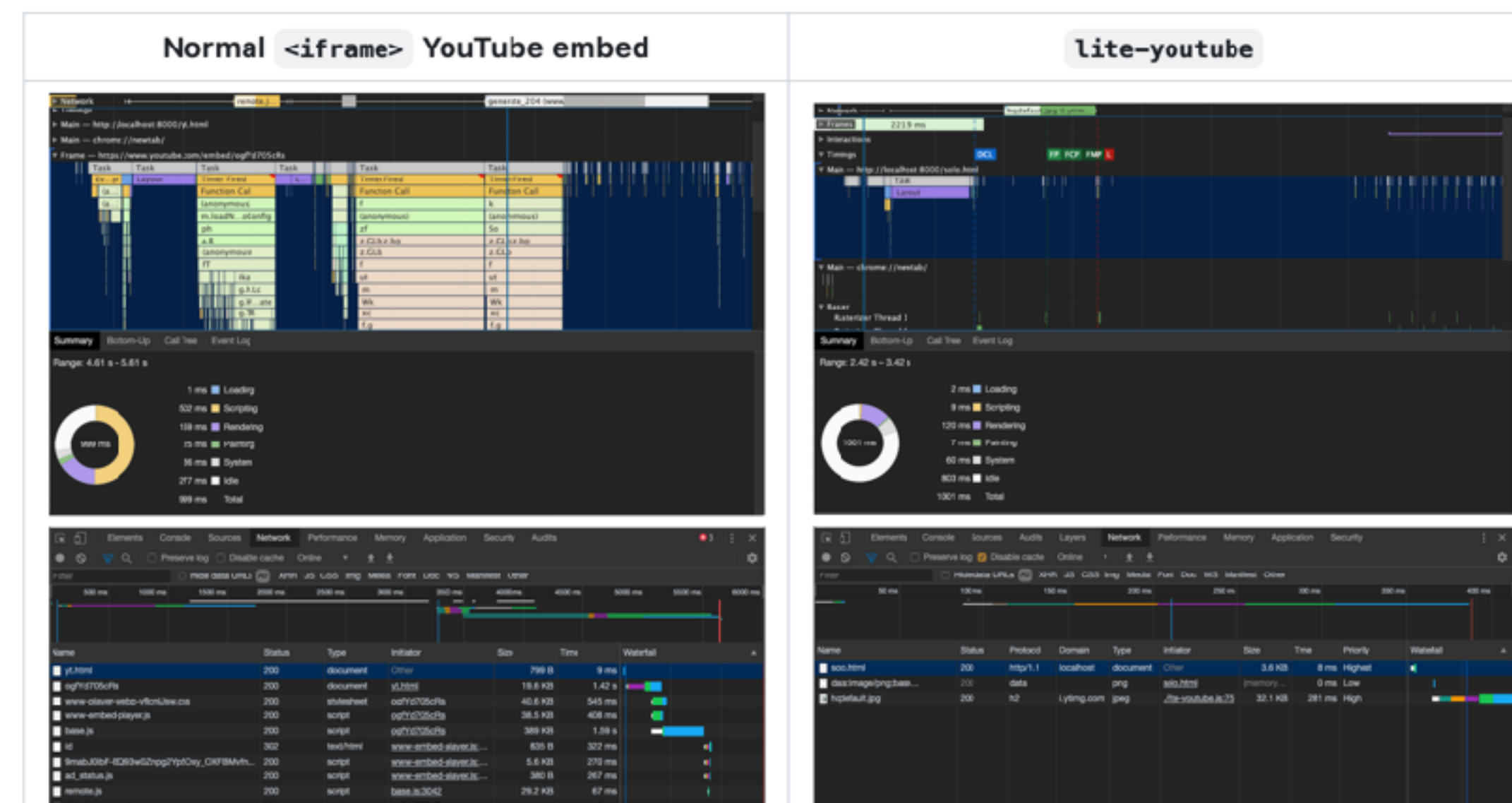
Lite YouTube Embed npm v0.2.0

Renders faster than a sneeze.

Provide videos with a supercharged focus on visual performance. This custom element renders just like the real thing but approximately 224x faster.

Demo: <https://paulirish.github.io/lite-youtube-embed/>

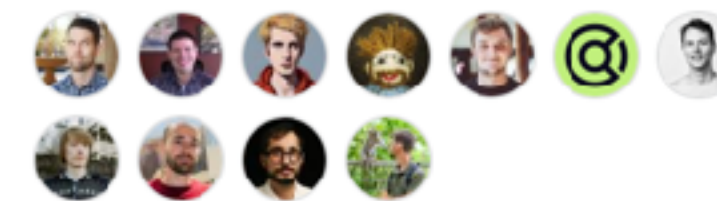
Comparison



Used by 644



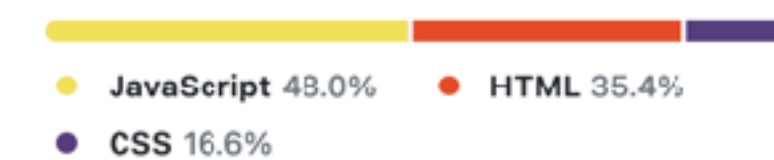
Contributors 19



Environments 4

- Preview Active
- github-pages Active
- Production Active
- staging Abandoned

Languages





Avoid embeds



Defer loading if possible



Lazyload



Import on interaction



Don't use Google Analytics



withcabin.com

Cabin.

How green is your website?

Pricing

Docs

News

Sign In

Get Started Free →

Privacy-first, carbon conscious web analytics



No cookies or consent banners



Faster, lighter and greener



No data sharing or ad networks



Compliant with all privacy laws

Cabin.

normally.com

NS Normally Studio

Summary

Top Pages

Referrals

Events

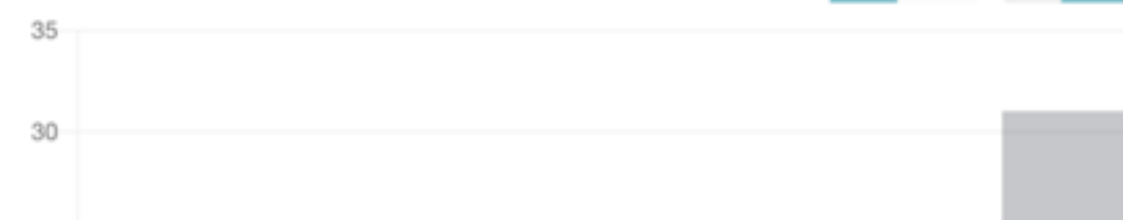
Tweets

Sources

Energy & Carbon

Today 7d 14d 30d ...

PAGE HITS
134

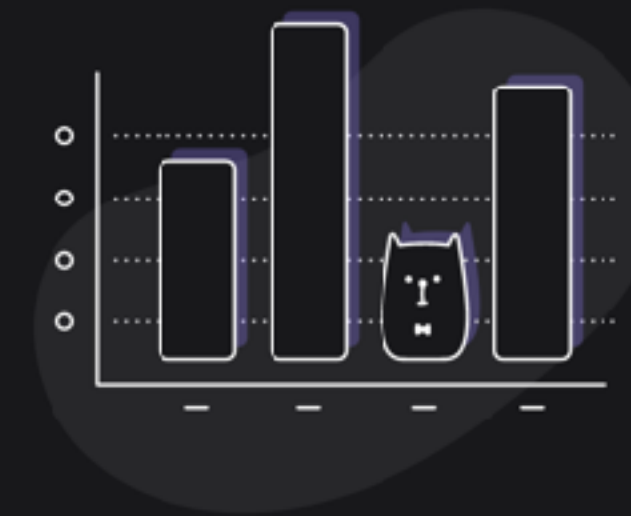


The Google Analytics alternative without compromise

New [Filter your dashboard by event completions](#)

For the longest time, website analytics software was seriously bad. It was hard to understand, time-consuming to use, and worse, it exploited visitor data for big tech to profit.

Fathom is a Google Analytics alternative that doesn't compromise visitor privacy for data. We revolutionized website analytics by making them easy to use and respectful of privacy laws (like GDPR and more).



View a live demo

Get started for free

aremythirdpartiesgreen.com

[Are my third parties green?](#)

[Why?](#)

[How](#)

[API](#)

[Directory](#)

[Test a web page](#)

Are my third parties green?

Check the third party resources used by a website.

Enter a URL

Test

[Advanced settings](#)

All test data is anonymously saved and stored privately. Test results pages are not indexed, but are publicly accessible to anyone with the right URL.

**Not all bytes are
created equal**



Use less Javascript







Design for less JS





Design for less JS



Use native APIs





Design for less JS



Use native APIs



Do you need to transpile?





Design for less JS



Use native APIs



Do you need to transpile?

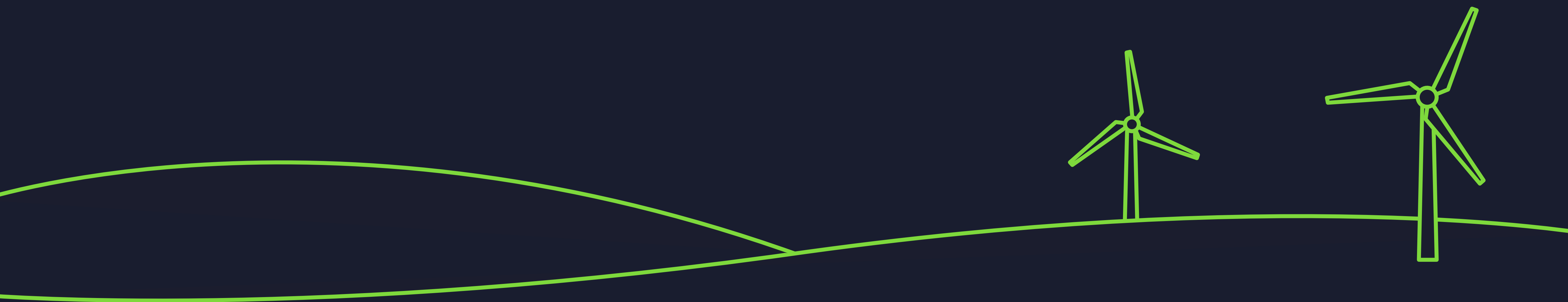


Do you need a framework?





Optimise all the things





Caching



bit.ly/40B38ou



4 March, 2019

Cache-Control for Civilians

Table of Contents

The best request is the one that never happens: in the fight for fast websites, avoiding the network is far better than hitting the network at all. To this end, having a solid caching strategy can make all the difference for your visitors.



Harry Roberts
@csswizardry · [Follow](#)



How is your knowledge of caching and Cache-Control headers?



1,696 votes · Final results

10:22 PM · Mar 3, 2019



[Read the full conversation on Twitter](#)



25



Reply



Copy link

[Read 11 replies](#)



Hi there, I'm Harry. I am an **award-winning** Consultant Web Performance Engineer, designer, developer, writer, and speaker from the UK. I **write**, **Tweet**, **speak**, and **share code** about measuring and improving site-speed. You **should hire me**.

[Follow @csswizardry](#)

[Arrange a consultation.](#)

[Projects](#)



Caching



Minification and compression





Caching



Minification and compression



Tree-shaking





Caching



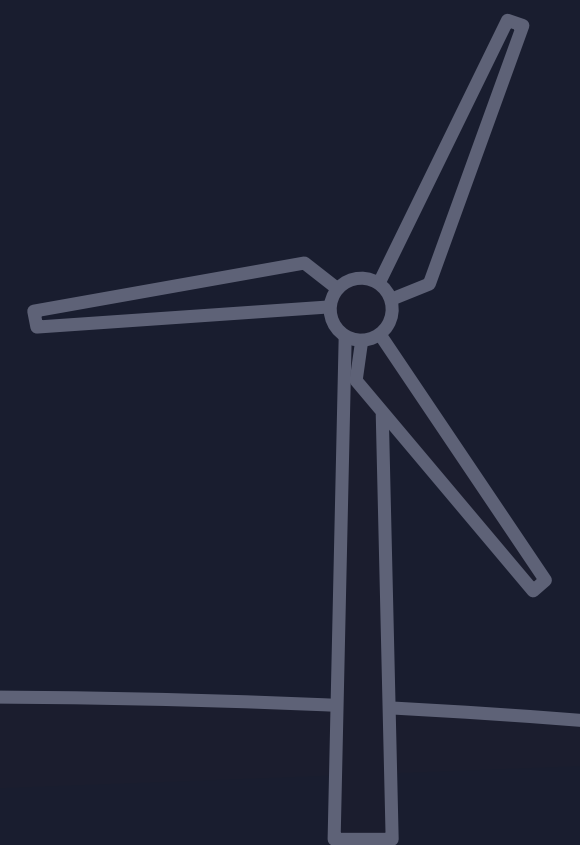
Minification and compression



Tree-shaking



Code splitting



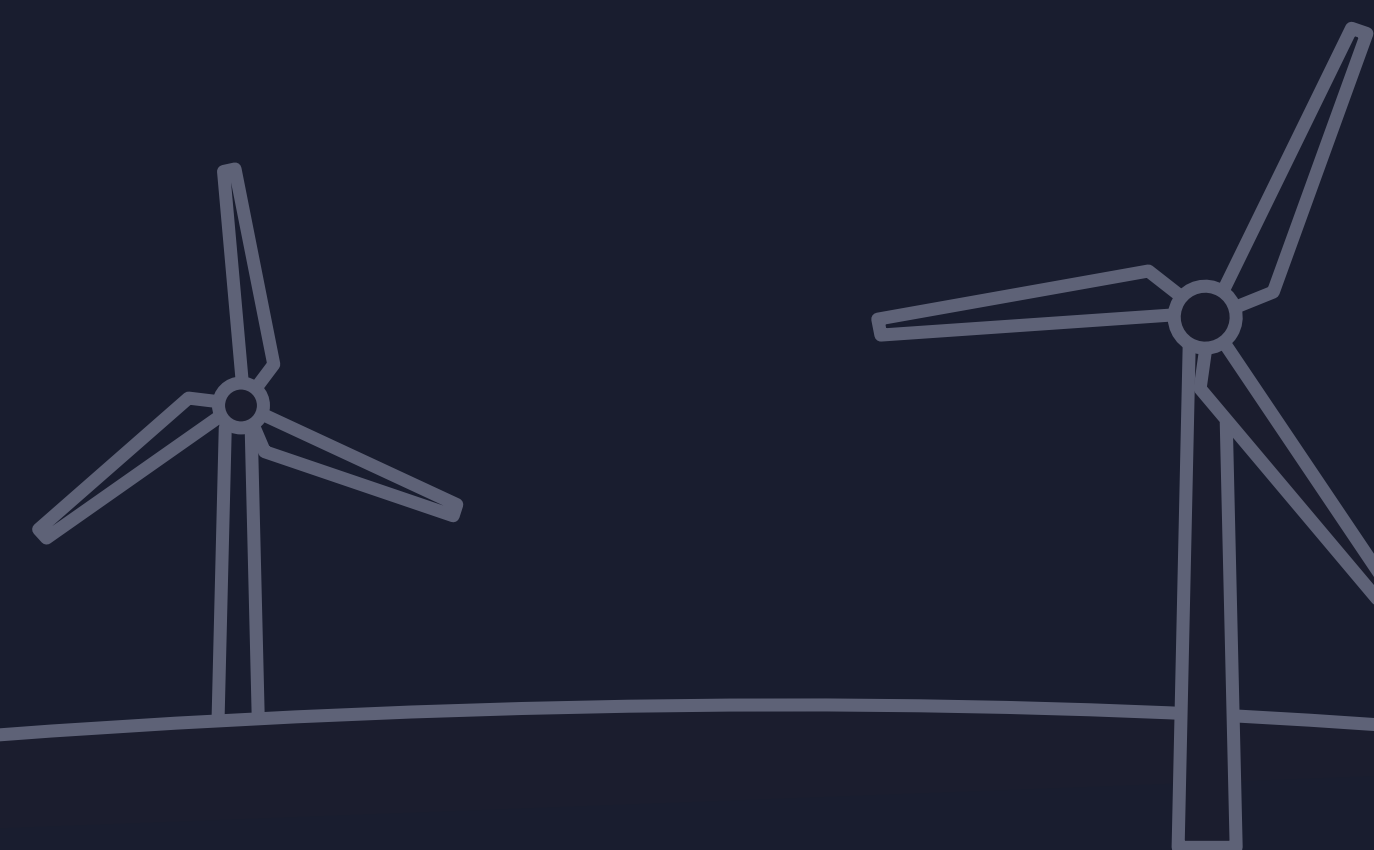
Static import

```
import { Auth } from "@aws-amplify/auth";  
const user = Auth.currentAuthenticatedUser();
```



Dynamic import

```
import("@aws-amplify/auth").then(({ Auth }) => {  
  const user = Auth.currentAuthenticatedUser();  
});
```





Caching



Minification and compression



Tree-shaking



Code splitting



Dependency auditing



Device
manufacture



Infrastructure



Device use



Device
manufacture



Infrastructure



Device use



Device
manufacture



Infrastructure



Device use



Device
manufacture



Infrastructure



Device use





Low-energy colour scheme



User journey

Device
manufacture



Infrastructure



Device use





Renewable energy

thegreenwebfoundation.org/directory

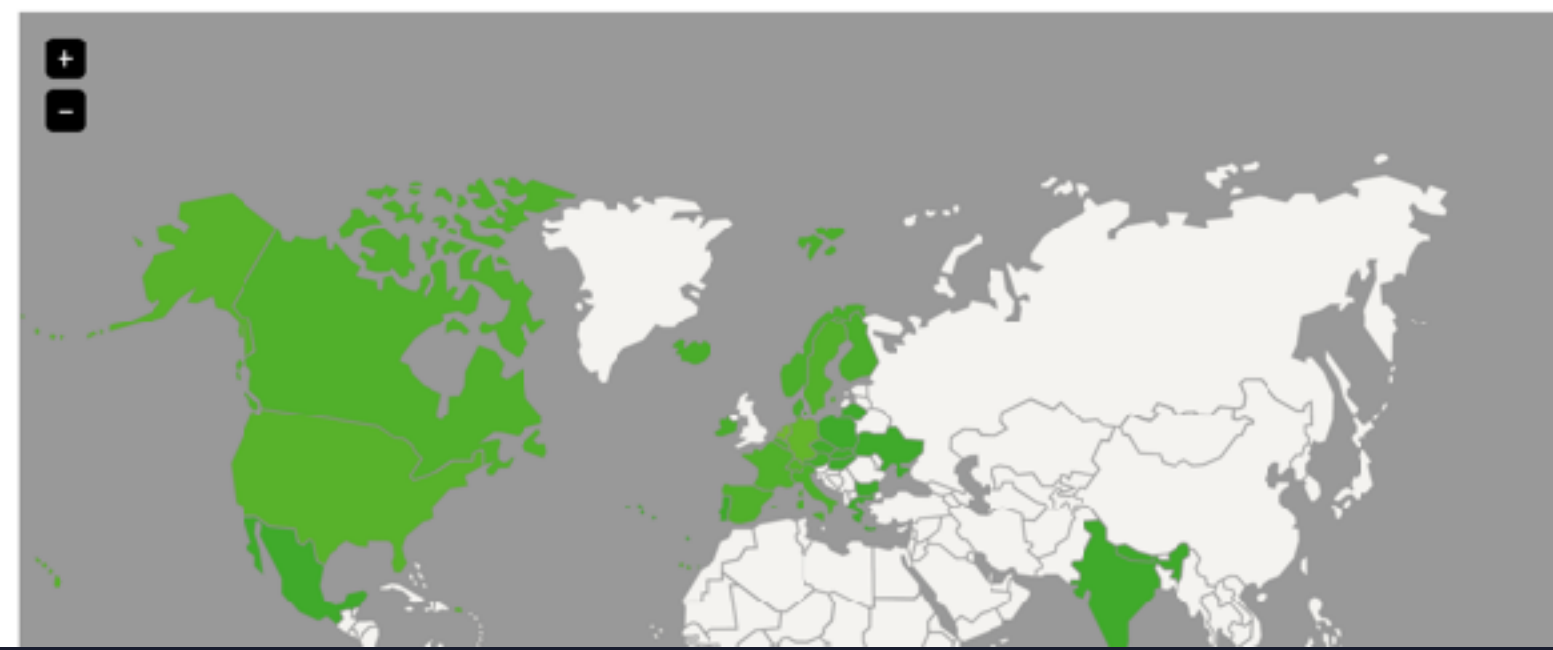
The Green Hosting Directory, as used by the apps

On this page, you will find our Green Hosting Directory.

For every country, the list starts with [Partners](#): the hosting companies that provide proof of their green claims.

This service is provided free of charge [for green hosters that can be identified through AS numbers and/or IP ranges](#).

Are you missing a green hosting provider in this list? Please [register yourself](#) or [ask them to register with us](#).





Timing

branch.climateaction.tech

The screenshot shows the website's header with a navigation menu containing 'branch', 'ISSUES', 'ABOUT', 'DONATE', and 'OPEN CALL'. The 'branch' logo is on the left, and the 'Climate Action .tech' logo is on the right. A 'GRID INTENSITY VIEW: LOW' selector is located in the top right corner. The main content area features a large heading: 'Magazine for a Sustainable and Just Internet for All'. Below this is the subtitle 'Issue 4: The Open Climate Edition' and the date 'SUMMER 2022'. The featured image is the cover of the 'branch' magazine, Issue 04, Summer 2022. The cover art is a vibrant illustration of two women sitting at a table, surrounded by various objects like a laptop, a cat, and a bird. The text on the cover includes 'branch', 'ISSUE 04', 'A SUSTAINABLE INTERNET FOR ALL', and 'SUMMER 2022'.

branch.climateaction.tech

The image shows a screenshot of the website branch.climateaction.tech. The header is a solid yellow bar. On the left, there is a logo for 'branch' consisting of a circle with a downward arrow and the word 'branch' in bold. To the right of the logo are four navigation links: 'ISSUES', 'ABOUT', 'DONATE', and 'OPEN CALL'. On the far right of the header is the 'Climate Action .tech' logo, which features a stylized globe icon. Below the header, on the right side, there is a small text element: '? GRID INTENSITY VIEW: HIGH' with a downward arrow. The main content area is also yellow. In the center, there is a large, bold heading: 'Magazine for a Sustainable and Just Internet for All'. Below this heading is a smaller heading: 'Issue 4: The Open Climate Edition', which is underlined. Underneath that is the text 'SUMMER 2022'. At the bottom of the page, there is a white rectangular box containing the text: 'Crafting a more vibrant future with joy and community'.

branch

ISSUES ABOUT DONATE OPEN CALL

Climate Action .tech

? GRID INTENSITY VIEW: **HIGH** ▼

Magazine for a Sustainable and Just Internet for All

Issue 4: The Open Climate Edition

SUMMER 2022

*Crafting a more vibrant future
with joy and community*



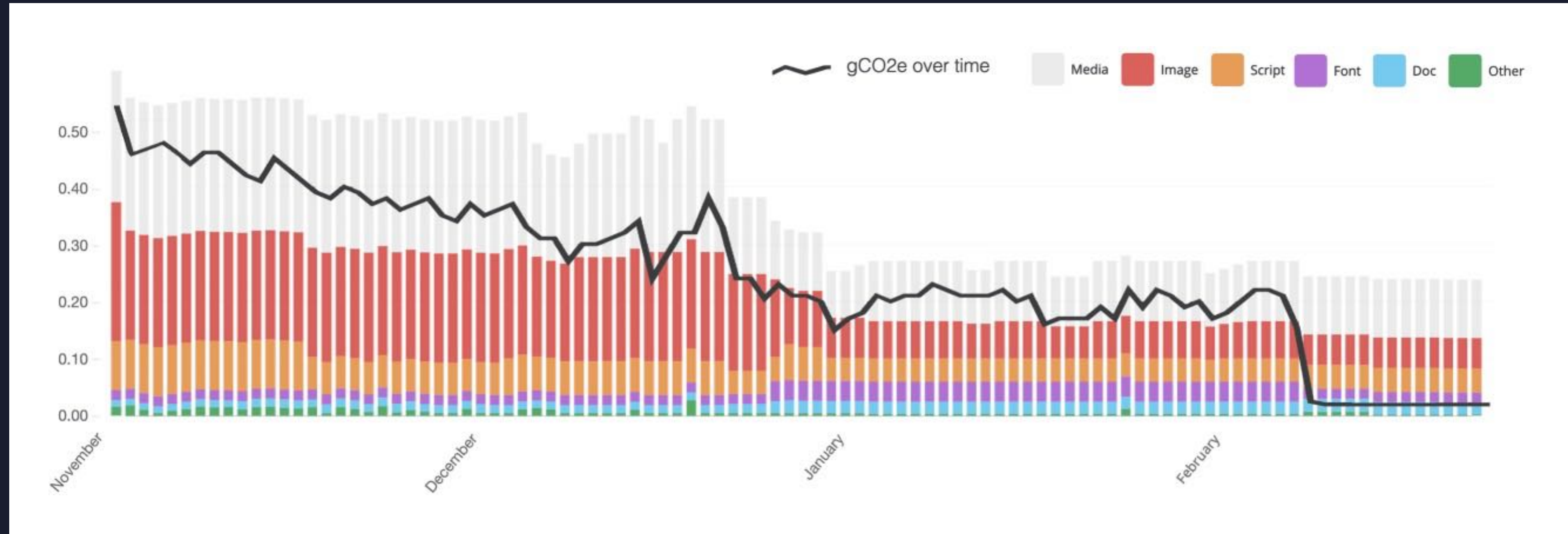
Location

Case study: UsTwo



Case study: UsTwo

0.54gCO₂e → 0.02gCO₂e



45% to 99%

carbon reduction



greensoftware.foundation



Learn how to build, maintain and run greener applications

Take Our Course



[About](#) [Working Groups](#) [Projects](#) [Resources](#) [Articles](#)



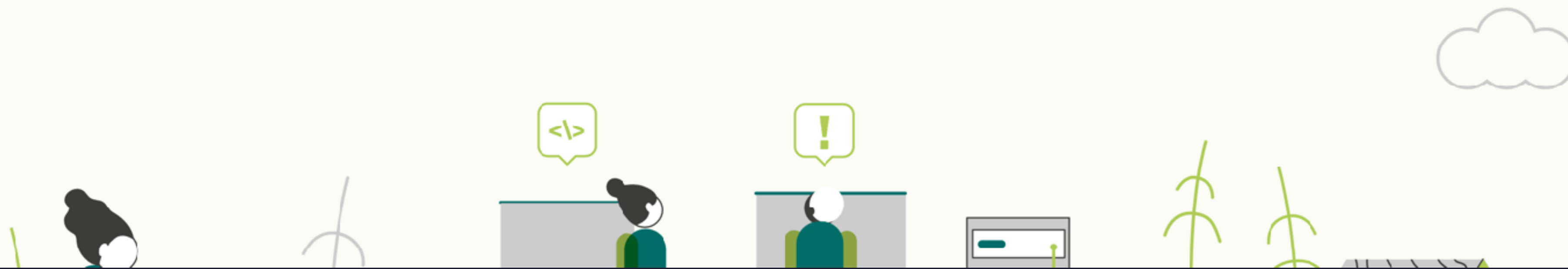
JOIN US

We are building a trusted ecosystem of people,
standards, tooling and best practices for

GREEN SOFTWARE

Sign up to our newsletter...

Sign up





Developer tooling

“

If I was a better programmer, I'd write a script that shows you the cumulative CO₂ you've generated every time you type `npm install` .

Eric Bailey



Consider a static site





Consider a static site



Don't run optimisations in development





Consider a static site



Don't run optimisations in development



Remove unused dependencies





Consider a static site



Don't run optimisations in development



Remove unused dependencies



Reduce complexity



“

Shaving off a single kilobyte in a file that is being loaded on 2 million websites reduces CO2 emissions by an estimated 2950 kg per month.

Danny van Kooten



Why do our individual actions matter?



A photograph of a volcanic eruption. A large, billowing plume of dark ash and smoke rises from a dark, rocky landscape. The base of the plume is illuminated by bright orange and yellow lava flows. The sky is a dark, overcast grey.

**Unfortunately,
capitalism**



Amplify our voices



Lead by example



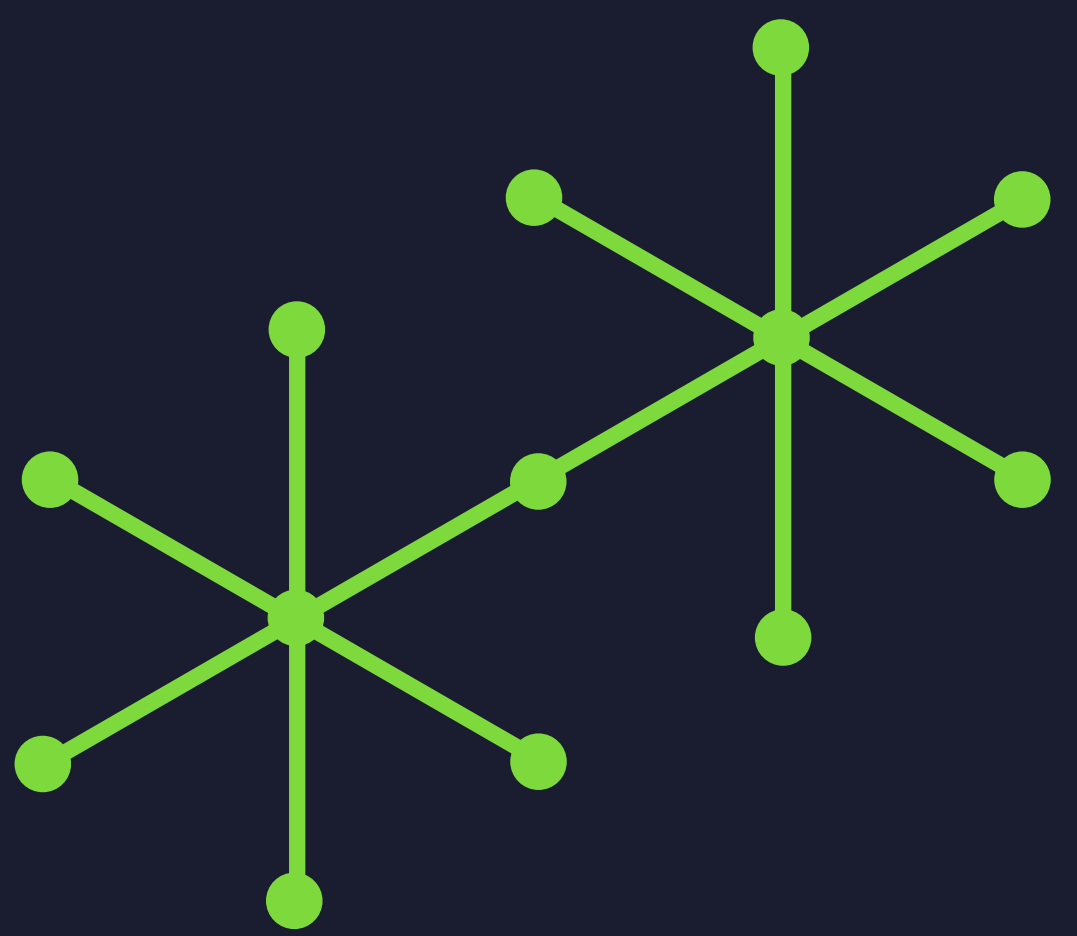
Regulation

“

Cultural revolutions don't happen because of systems change; they happen when a group of people voice a compelling story that propagates across society and becomes a social norm.



Networks



A close-up portrait of Elon Musk, looking slightly to the right with a skeptical or questioning expression. He has short brown hair and a light beard. The background is a solid blue color. Overlaid on the center of his face is the text "Elon Musk isn't going to solve climate change" in a bold, white, sans-serif font.

**Elon Musk isn't going to
solve climate change**

Form a workplace action group



Support each other to take climate action



Push the climate agenda and greener practices within your organisation



Share resources



Hold each other accountable



Share your learning



Write



Speak at events



Share on social media





**Climate
Action
.tech**

w3.org/community/sustyweb



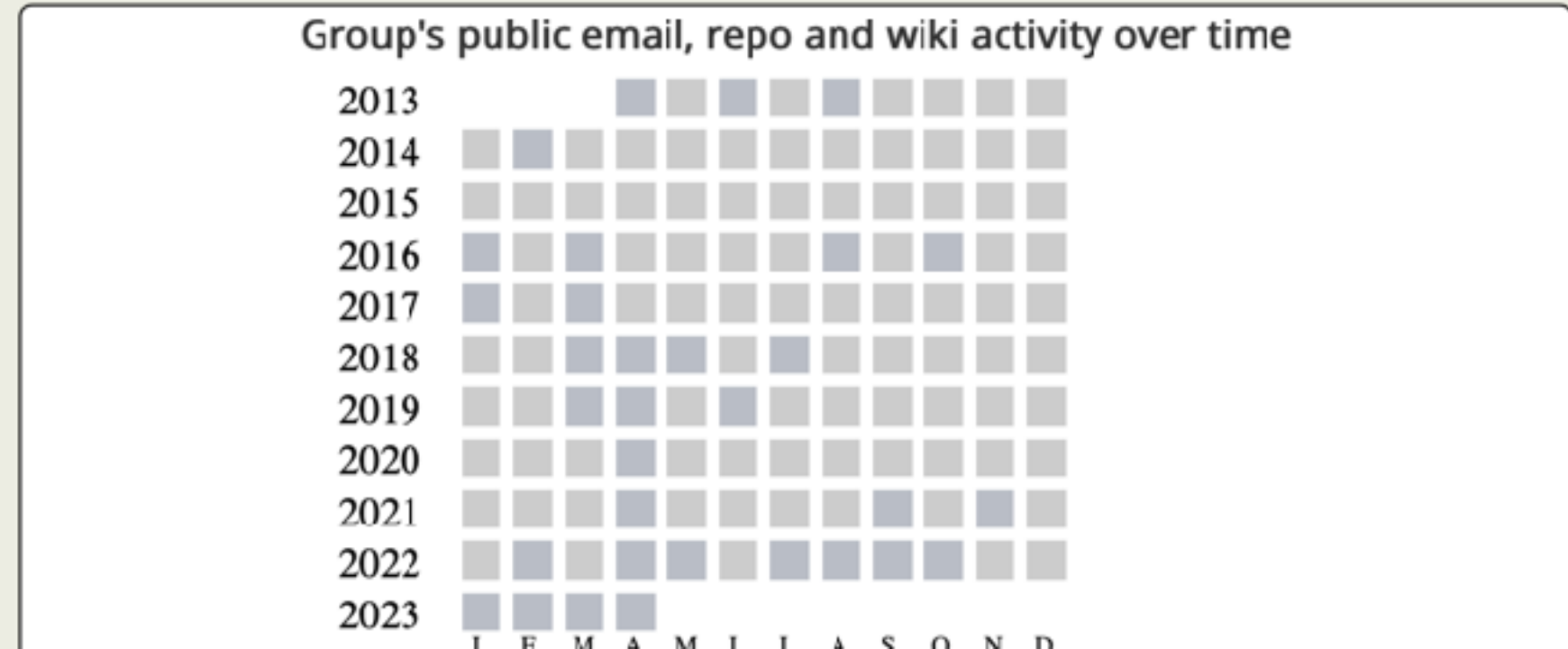
- CURRENT GROUPS
- REPORTS
- ABOUT

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SUSTAINABLE WEB DESIGN COMMUNITY GROUP

A community group dedicated to creating sustainable websites. This group will not publish specifications.

[w3c/sustyweb](#)



Tools for this group

- Mailing List
- Wiki
- Slack
- GitHub
- RSS
- Contact This Group

About the Group

- [About](#)
- [Charter](#)
- [Committees](#)

Recognising our power + privilege





THIS IS FOR EVERYONE

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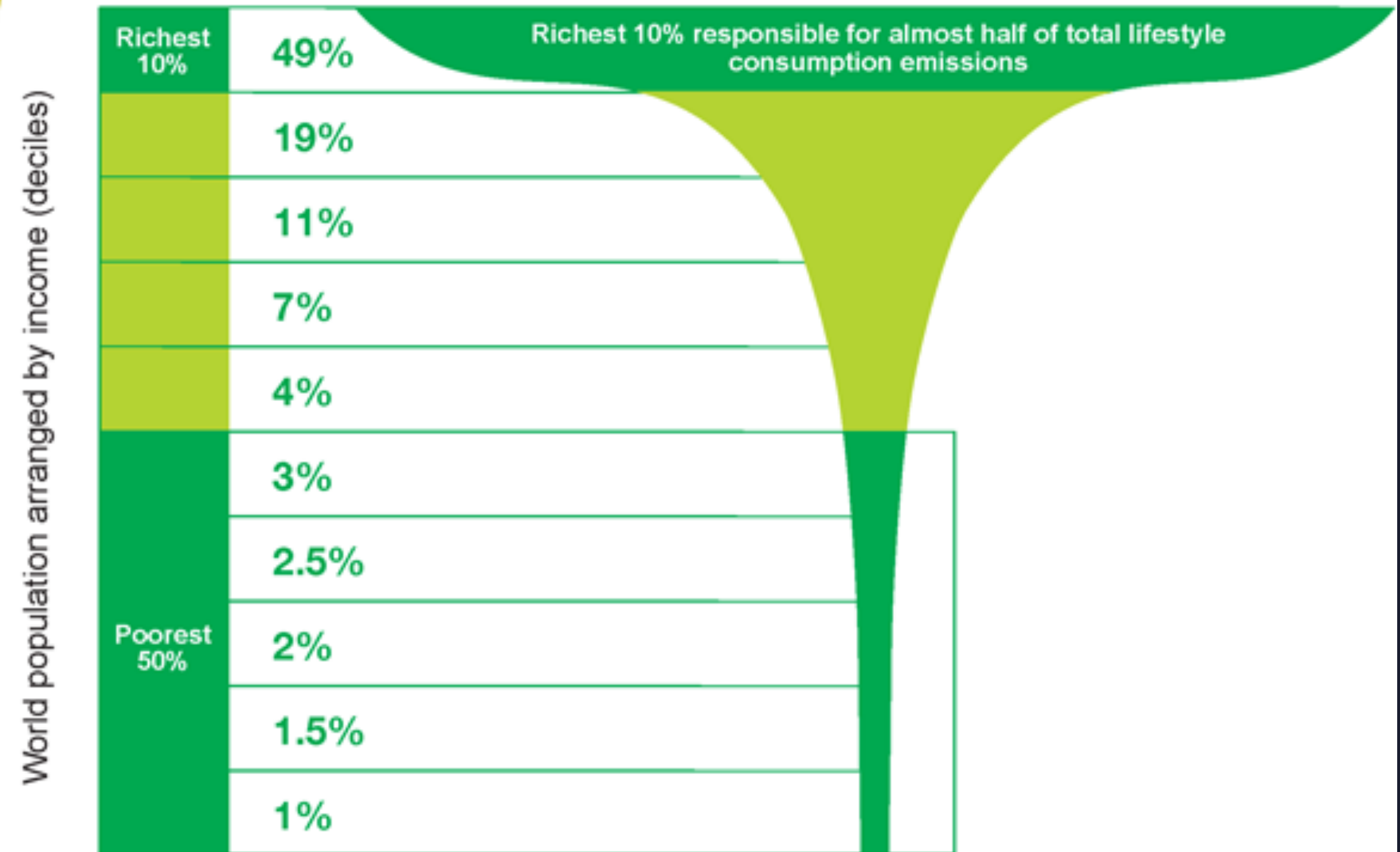


OXFAM

The poorest **50%** is only responsible for around **10%** of total lifestyle consumption emissions.

**OXFAM MEDIA BRIEFING:
EXTREME CARBON INEQUALITY**

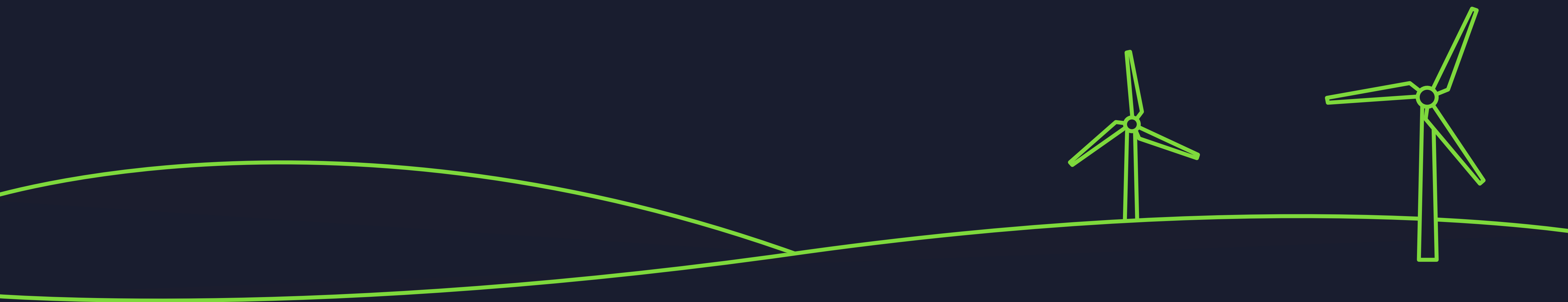
Percentage of CO₂ emissions by world population



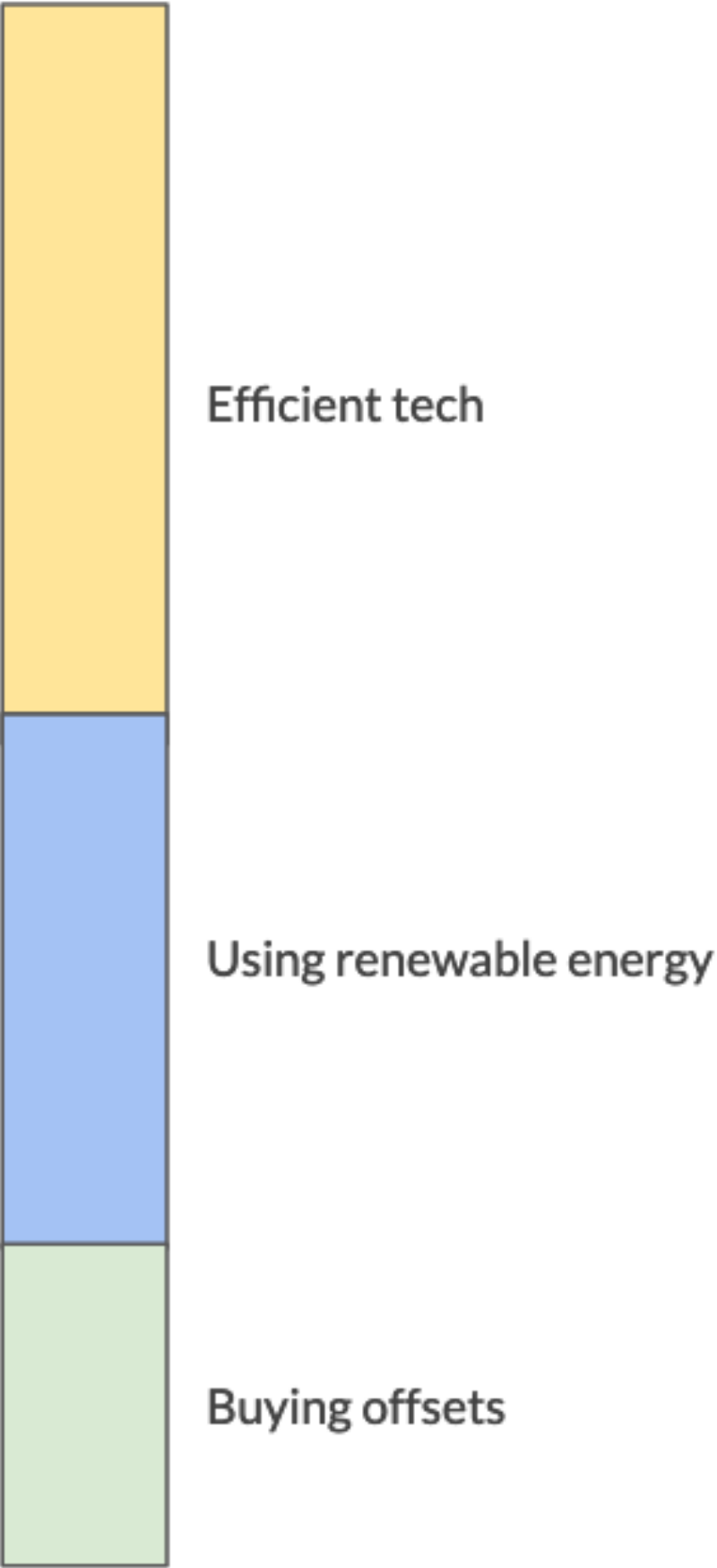
Sometimes less is more



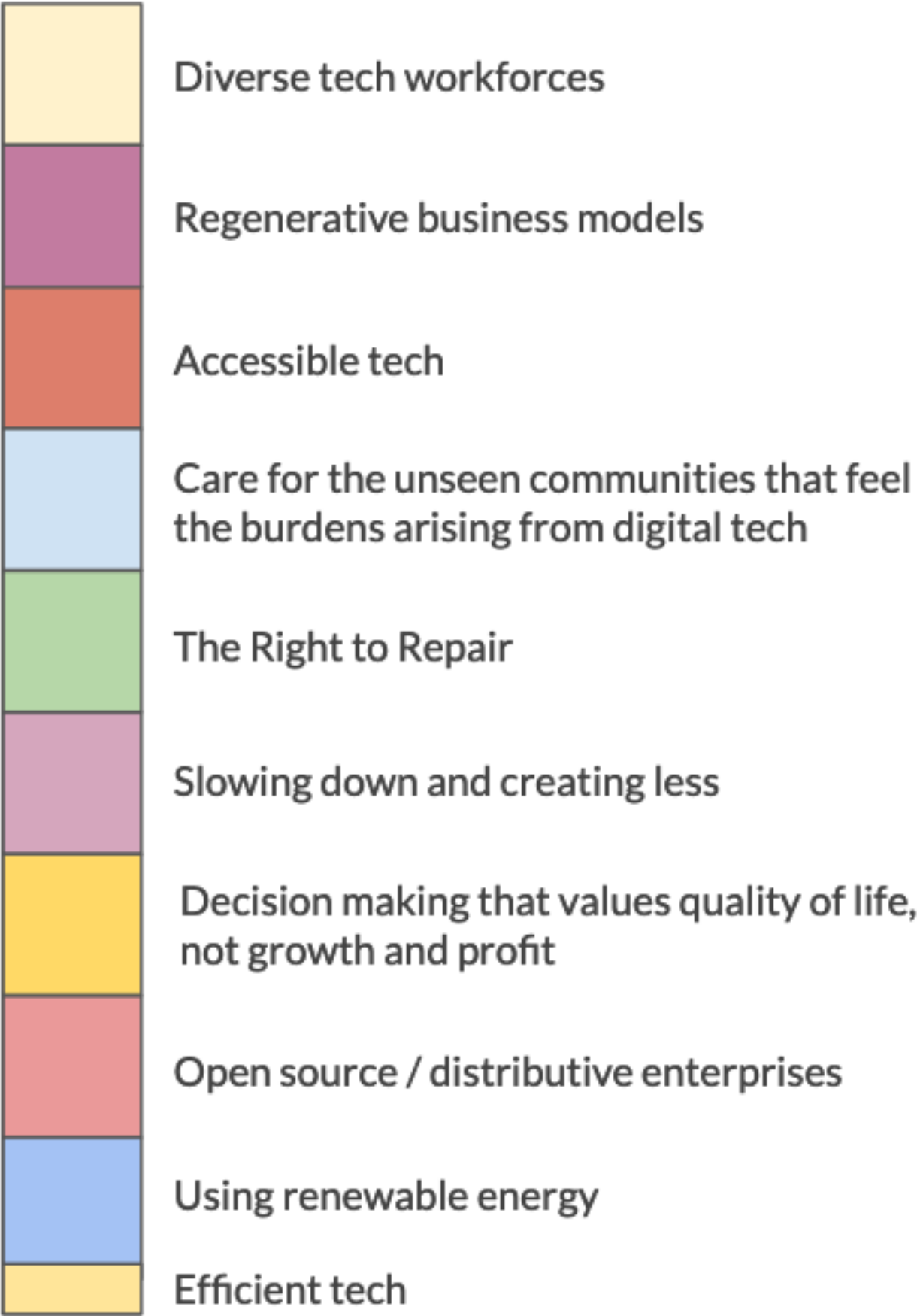
Reasons to be hopeful



What people think building a sustainable internet means



What it's more about





“

Hope doesn't preclude feeling sadness or frustration or anger... Hope is not optimism. Hope is a discipline... we have to practice it every single day.

Mariame Kaba

planet

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